HEALTH PROBLEM SOURCES

STANFORD UNIVERSITY LIBRARY
APR 1 1927

BY

MARION OLIVE LERRIGO

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY, IN THE FACULTY OF PHILOSOPHY, COLUMBIA UNIVERSITY

STANFORD UNIVERSITY LIBRARIES
WITHDRAWN

BUREAU OF PUBLICATIONS
Teachers College, Columbia University
NEW YORK CITY
1926

3781
C72L
UNCLASSED
Dissertation

HEALTH PROBLEM SOURCES

BY

MARION OLIVE LERRIGO

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY, IN THE FACULTY OF PHILOSOPHY, COLUMBIA UNIVERSITY

BUREAU OF PUBLICATIONS

Teachers College, Columbia University

NEW YORK CITY

1926

Copyright, 1926, by Teachers College, Columbia University

ACKNOWLEDGMENTS

The author wishes to express her deep appreciation of the unfailing encouragement, constructive suggestions and thoughtful criticisms which have been generously given by Dr. Thomas D. Wood, chairman of the dissertation committee, not only during this investigation, but in the years of graduate study preceding it; a period when graduate study in health education was an uncharted, at times a bewildering, but always a fascinating experiment. The author is also indebted to the other members of the committee, Professors Arthur I. Gates, Harold O. Rugg, and Maurice A. Bigelow for many helpful criticisms and suggestions; to Miss Ruth Strang, Research Assistant, Teachers College, for permission to use some of the unpublished results of an investigation made prior to the construction of the Gates-Strang Health Knowledge Test; to Miss Clotilde Patton, Instructor in Health Education, Teachers College, for her able collaboration in a study of exhibits representing work in health education from each of ten classrooms; and to Miss Emma Dolfinger, Director, Division of Health Education, the American Child Health Association, and Miss Lucy Oppen, Staff Associate of that Association for placing these exhibits at the author's disposal.

M. O. L.

Digitized by the Internet Archive
in 2025

https://archive.org/details/healthproblemsou0000unse_r8x7

CONTENTS

PAGE

INTRODUCTION 1

CHAPTER

I. THE METHOD OF THE INVESTIGATION 3
Description of sources 5
Method of recording the results of the analysis of sources 13

II. STATISTICAL ANALYSIS OF RESULTS 17
Classification and listing of groups of problems recorded in the analysis of sources 17
Significance of ranking of problems according to frequency of mention 23
Differences of emphasis given by the seven divisions of sources to the groups of problems 29
Value of this analysis in indicating the detailed questions to be studied with reference to each problem 31
Probable comprehensiveness of the list of problems resulting from this analysis 34
Summary 36

III. RACIAL HYGIENE 37
Education for parenthood 37
Eugenics 39
Sex hygiene 39
Venereal diseases 41
Child health and maternity hygiene 44
Summary and discussion 47

IV. PERSONAL HYGIENE 49
Nutrition 49
Big muscle activity 52
Feet 53
Recreation 53
Swimming pool 53
Circulatory system 53
Hygiene of respiration 54
Sleep and rest 55
Work 55
Fatigue 55
Elimination of waste products 55
Kidney diseases 55
Care of skin 56
Bathing 56
Clothing 56
Mouth hygiene 57
Nose and throat 57

Voice 58
Ears 58
Vision 58
Headaches 58
Glandular deficiencies 59
Goiter 59
Diabetes 59
Hands 59
Hair 59
Summary and discussion 60
V. Mental and Nervous Hygiene 63
Educational implications of problems listed 63
Important problems 63
Summary and discussion 64
VI. Degenerative Diseases 66
Educational Implications 67
Cancer 68
VII. Control of Infectious Diseases 70
Tuberculosis 70
Colds 72
Pneumonia 72
Influenza 73
Acute anterior poliomyelitis 73
Diphtheria 73
Scarlet fever 73
Measles 73
Whooping cough 73
Meningitis 74
Mumps 74
Encephalitis 74
Summary 74
Discussion 75
Typhoid fever 77
Hook worm 77
Diarrhoea 78
Dysentery 78
Cholera 78
Discussion 78
Summary 79
Malaria 79
Plague 80
Yellow fever 81
Typhus 81
Deer fly fever 81
Dengue 81
Rocky Mountain Spotted Fever 81
Sleeping sickness 81
Relapsing fever 81

Summary 82
Local infections 82
Septicemia 83
Septic sore throat 83
Appendicitis 83
Rheumatism 83
Summary 84
Small pox 84
Chickenpox 84
Parasitic skin infections 84
Trachoma 84
Leprosy 84
Summary 84
Anthrax 86
Tetanus 86
Rabies 86
Malta fever 87
Foot and mouth disease 87
Summary 88
VIII. Community Hygiene 90
Public health administration 90
Quarantine 91
Immigration 92
Vital statistics 92
Control of communicable diseases 92
Disinfection and fumigation 92
Child health activities 92
Sanitary supervision of milk supplies 92
Sanitary supervision of other food supplies 93
Water supply 93
Sewage disposal 93
Garbage 94
Street cleaning 94
Control of insects 94
Housing 94
Plumbing 94
Heating 94
Ventilation 94
Industrial hygiene 95
Transportation 95
National Parks 96
Laboratory 96
Biological products 96
Research 96
Summary and discussion 97
IX. Use of Professional Health Service 102
Medical service 102
Health examination 102

Nursing 103
Hospitals 103
Health centers 103
Nostrums and quackery 103
Summary and discussion 103
X. Temperance Education 106
Alcohol 106
Tobacco 106
Other narcotics 106
Discussion 107
XI. Accident Prevention 108
Educational implications of accident statistics 108
List of problems 108
XII. Interpretative Material 110
Public health education 110
Life extension 111
Rural health 112
Economic and social aspects of public health 115
XIII. Present Practice in the Schools 119
Description of two available sets of data representing present practice in the schools 119
Comparison of three studies 120
Important differences 122
Conclusions 122
XIV. The Value of the Method Used in this Study 127
Values of this type of study 127
Questions unanswered by this type of study 127
XV. Summary and Discussion 133

Appendix A. Number of Items Recorded for Each of One Hundred and Sixteen Problem Groups in Each Source Division, and Rank According to Frequency of Mention 141

Appendix B. Number of Items Recorded for Each of Ten Problem Divisions in Each Source 147

Appendix C. One Hundred and Sixteen Groups of Problems Ranked According to Frequency of Mention 149

TABLES

TABLES		PAGE
I.	List of One Hundred and Sixteen Groups of Problems, with Number of Different Specific Problems and Questions Considered in Each Group; Total Items Recorded; Number of Sources and Number of Source Divisions in Which Problems Are Mentioned	19
II.	Twenty-Seven Groups of Problems Ranking Highest According to the Total Number of Items Recorded	23
III.	Ten Groups of Problems Ranking Lowest According to the Total Number of Items Recorded	25
IV.	The Ten Groups of Problems Ranking Highest in Each of the Seven Divisions of Sources Analyzed	26
V.	Problem Groups Which Appear in More than One Source Division in Table IV	28
VI.	Number of Problem Groups Discussed in Each Source Division	28
VII.	Number of Items Recorded for Each of the Ten Problem Divisions in Each Source Division	30
VIII.	Ranking of Nine Problem Divisions According to Number of Items Recorded, in the Totals, and in Each Source Division	31
IX.	Correlation Coefficients Computed for the Relationships Between the Ranking of Problems in Certain Source Divisions	31
X.	Percentage of Total Items Recorded for Each of the Ten Problem Divisions as Occurring in Each of the Eight Source Divisions	32
XI.	Distribution of Items Recorded for Respiratory Diseases, Among Different Sources	75
XII.	Sanitation of Rural Homes	114
XIII.	General Cleanliness of Rural Homes	115
XIV.	Comparison of Three Studies, Comparing Subject Matter Actually in Use in Programs of Health Education (Studies B and C) with Problems Recorded in the Study Made by the Writer. (Study A)	120
XV.	Problem Groups in Study A not Included in Study B	121
XVI.	Comparison of Major Problems in Three Studies	123

HEALTH PROBLEM SOURCES

INTRODUCTION

"Tradition and opinion, unsupported by facts, are no longer sufficient bases for including any subject or topic in the public school curriculum." [1] This, the opening sentence of the Introduction to Part III of the *Third Yearbook of the Department of Superintendence,* is the expression of the conviction which has been the cause of much of the recent activity in curriculum revision and which underlies the study here presented. Affirmatively stated, this means that a claim for the inclusion of any subjects or topics in the curriculum should be supported by the submission of definite evidence of their value.

An inquiry into the definition of what is valuable brings us to a second profound conviction which has animated those who would revise the curricula of our public schools. This is the belief that school activities to be of lasting value should deal more directly with the real problems of living than they have in the past.

These two principles may be called the hypotheses upon which the study to be reported here is based; first, that school activities should be concerned with real life problems, and second, that these problems should be ascertained by investigation supported as far as possible by the evidence of facts rather than opinions.

The selection of subject matter in the field of health education as in other fields of education, has usually been made in accordance with tradition or custom and the personal opinion of the curriculum makers. An attempt to make a curriculum upon a basis of objective investigation and controlled experiment would at the present time necessitate beginning almost at the beginning, for the body of available research dealing with the making of health education curricula is negligible, when compared with the amount that is necessary.

[1] *Third Yearbook, Department of Superintendence.* Research in Constructing the Elementary School Curriculum. Dept. of Superintendence, National Educational Association, 1925, p. 31.

In the *Third Yearbook of the Department of Superintendence,* published in February, 1925, seven studies are reported which deal directly, or indirectly, with curriculum making in health education. Three of these studies recognize the value of making a survey of the actual health needs of the local community, as a basis for making the course of study in health education, but none of the studies was extensive enough to result in a list of health problems suitable for general use.

The study presented in the following pages is an attempt, by objective analysis of factual evidence, to formulate a list of vital health problems, which will provide valuable information for those who are engaged in selecting subject matter for courses of study or programs of health education whether in the elementary or secondary schools.

CHAPTER I

THE METHOD OF THE INVESTIGATION

It was the purpose in making this study to accomplish two things: to formulate, by an analysis of objective evidence, a list of the important health problems with which courses of study in health education should deal and to compare with this list, for purposes of criticism and evaluation, the subject matter of programs or courses of study now in use in health education.

There are several kinds of objective analyses which have been used by curriculum makers. Those reported in the *Third Yearbook of the Department of Superintendence* fall for the most part under the following heads:

1. Direct study of the activities or problems, with which individuals are concerned, in which the information is secured directly from individuals, through interviews, questionnaires, or other methods. Two distinctly different methods are used: (1) the individual is asked to enumerate all the activities in which he takes part, which involve a certain process, such as arithmetic, or (2) the individual is given a list of specified activities and asked to check those which concern him or in which he takes part. The second method is the one which was used in making two of the surveys of health needs reported in the chapter on Health Education in the third yearbook. It is a useful method of securing information with regard to the items on the questionnaire, but does not give any assurance that the items listed are the important ones, or that they are all-inclusive. When the second method is used, the items included must be those for whose importance there is valid evidence.
2. An activity analysis (or job analysis), involving a study of some activity, task, or occupation to ascertain what skills are needed by the persons engaged in the activity, e.g., study of the arithmetic needed by salesmen, or of the biological knowledge needed for intelligent reading of newspapers and periodicals.

3. Studies of children's interests.
4. Studies of the frequency and gravity of errors, e.g., in grammar.
5. Analysis of the collected opinions of laymen regarding important social problems.
6. Analysis of political platforms (used in social science studies).
7. Analysis of problems dealt with in periodicals.
8. Analysis of the judgments of advanced thinkers, or specialists, as expressed in their publications (used especially in the field of social sciences).
9. Analysis of reports, surveys, official bulletins, government statistics, or other reliable statistics, which summarize actual situations and needs.

The last two mentioned are the methods which were used in this study.

Each method has its advantages. Study of the judgments of specialists, as stated in their published works, derives its special value from the fact that "specialists, who have devoted years, not only to the detailed intensive study of the theoretical aspects of their specialties, but who, in many cases have become practically acquainted with these problems in the field, have been deemed (by this group of research workers) to be best qualified to give an insight into, and a more mature judgment concerning the issues of present day life." [1]

The usefulness of surveys, and reports which describe or summarize actual situations is that they give us a large body of facts from which to draw conclusions. It is certainly to be desired that other studies in health education should be made, both along the same lines, and by using other methods, to check and supplement the results of this study.

Twenty-four different books, reports, bulletins, and pamphlets were analyzed in this study. Since these sources were selected from seven different kinds of material, they naturally fall into as many divisions. A list of sources follows. For convenience in recording data, a key number was given to each source. This key number is also indicated.

[1] Rugg, Harold O. "The Social Studies," Chapter VII, *Third Yearbook of the Department of Superintendence*, National Education Association, 1925, p. 221.

Division I

Key 1.—Mortality Statistics, 1922, Bulletin 154, Bureau of the Census. Government printing office, Washington, 1924.

In the detailed analysis of this source, each cause of death was recorded as one problem, with the following exceptions: Diseases causing less than one thousand deaths in the year were not recorded, unless for some special reason, such as the widespread fear of rabies, or the popular interest in diseases that are caused by dietary deficiency, of which scurvy is an example.

The list of causes of death used in the census reports includes a number of general or miscellaneous classifications such as "other diseases of the heart," or "diseases of the bladder," which because of their indefiniteness it was impossible to record accurately.

Any striking instance of a peculiar distribution of disease, according to age or sex of persons dying, or to geographical, urban or rural, or seasonal incidence, was also recorded as one question connected with the problem of that disease.

Since the information used was scattered through many pages and taken from many different tables, it is impossible to state accurately the actual number of pages analyzed in this source.

Division II

The sources in the second division were selected from the publications of the United States Public Health Service.

Key 2.—Publications of the United States Public Health Service, Miscellaneous Publications No. 12, Washington, Government Printing Office, May, 1924, and Public Health Service Publications, A List of Publications Issued Between October, 1923, and April, 1924, Reprint No. 923 (gives a few additional publications to those found in the preceding).

These two pamphlets contain a complete list, up to the time of their publication, of the book publications of the United States Public Health Service, since the first publications in 1881. Since these reports and reprints are designed for public education, it may be assumed that they deal with problems or topics which are considered significant by the Public Health Service.

Each title listed in these bibliographies was recorded as one problem. Since the topic dealt with in each report is in the majority of instances clearly indicated by the title of the report,

there was little difficulty in analyzing these lists. There were in all 1,328 titles in these lists. It should be noted that this bibliography of publications covers a period of forty-five years and that the range of publications covers the whole health field. These three sources were analyzed to discover whether there were significant differences between rural and urban problems.

Key 11.—Extent of Rural Health Service in the United States. Reprint No. 833, from the Public Health Reports. Washington, Government Printing Office, 1923, 10 pages.

Key 12.—Rural Sanitation. A Report on Special Studies made in fifteen counties 1914, 1915, and 1916. Public Health Bulletin No. 94, Washington, Government Printing Office, 1918, pp. 8-27.

Key 13.—Coöperative Rural Health Work of the Public Health Service in the Fiscal Year 1923. Public Health Reports, Dec. 14, 1923, Vol. 38, No. 50, pp. 2929-2951.

Division III

Key 3.—Annual Report of the Surgeon-General of the Public Health Service of the United States for the fiscal year 1919. Washington, Government Printing Office, 346 pp.

Key 4.—Idem., 1920, 391 pp.
Key 5.—Idem., 1921, 429 pp.
Key 6.—Idem., 1922, 330 pp.
Key 7.—Idem., 1923, 316 pp.

The Annual Reports of the Surgeon General were organized to deal with the following reports of the activities of the Service: Division of Scientific Research; the Division of Domestic Quarantine; the Division of Foreign and Insular Quarantine and Immigration, Sanitary Reports and Statistics (including public health education activities); Division of Marine Hospitals and Relief; Division of Venereal Diseases; Division of Personnel and Accounts; General Inspection Service, and Chief Clerk's office and needs of the service. The three last mentioned obviously deal with administrative problems within the Public Health Service. The other divisions give a picture of the health problems and activities throughout the nation as a whole. Reports of the Surgeon General represent the most authoritative attempt to describe annually health conditions of the whole country.

Division IV

Key 8.—Fisher, Irving. National Vitality: Its Wastes and Conservation. (Extract from Report of the National Conservation Commission, Senate Document No. 675, Vol. III, Sixtieth Congress, second session.)

Washington, Government Printing Office, 1910, 132 pp.

Key 9.—Moore, H. H. *Public Health in the United States.* Harper and Bros., New York, 1923, 557 pp.

Both of these writers rank as specialists in the field of public health, and Irving Fisher particularly deserves the title of "frontier thinker." His report, "National Vitality," has become recognized as a classic of its kind. Moore's book deals with similar problems and situations with the addition of the data that accumulated in the thirteen years between the publication of Fisher's report and Moore's book. In Moore's preface, indeed, he acknowledges his indebtedness to Professor Fisher for his stimulating example. Both of these books present comprehensive surveys of health problems in the United States, and consideration is given to all of the major groups of problems. Dr. Haven Emerson, who wrote the introduction to Mr. Moore's book, says, "Mr. Moore has put the medico-social professions not less than the laity under a lasting debt by giving in logical order, in tempting form and supported by accessible references to facts, all the essential information upon which well-informed opinion may be based in the scientific and economic aspects of applied preventive medicine."

Division V

Key 10.—Report of the Committee on Municipal Health Department Practice of the American Public Health Association, in coöperation with the United States Public Health Service. Public Health Bulletin, No. 136, Government Printing Office, Washington, 1923. pp. 7-271.

This report was prepared as the result of surveys of public health activities conducted in eighty-three cities in the United States. It was selected for analysis because it was thought that such a report should give a comprehensive summary of the problems with which municipal boards of health find it necessary to deal.

Division VI *

Key 14.—Williams, Jesse F. *Personal Hygiene Applied.* W. B. Saunders Company, Philadelphia, 1925 (second edition), 414 pp.

* *Note:* It should be stated here that originally sources were included as Division VII which represented the activities of voluntary health organizations. An analysis was made of each of the member organizations of the National Health Council. The following statement of the membership of the Council is taken from a bulletin published by the Council.

"The fourteen organizations which constitute at present the active, associate and advisory members of the National Health Council are all concerned with major fields of public

Key 15.—McLaughlin, A. J. *Personal Hygiene: Rules for Right Living.* The National Health Series, edited by the National Health Council. Funk and Wagnalls Company, New York, 1924, 63 pp.

Key 16.—Fisher, Irving and Fisk, Eugene Lyman. *How To Live.* Funk and Wagnalls Company, New York, 1919 (Fifteenth edition), pp. 1-187.

Key 17.—Lee, Roger I. *Health and Disease, Their Determining Factors.* Little, Brown and Company, Boston, 1917, 378 pp.

Key 18.—Winslow, Kelnelm. *The Prevention of Disease in the Individual.* W. B. Saunders Company, Philadelphia, 1924 (second edition), 427 pp.

Key 19.—Sadler, Wm. S. *The Essentials of Healthful Living.* The Macmillan Company, New York, 1925, 481 pp.

These six books deal primarily with the individual's problems of hygiene and disease prevention, and with the exception of the first listed, which was written for college students, they were prepared for the general public.

Books were selected which were written by reliable authors whose publications possess authority. Four of the books were

health work in America. The general American public is perhaps best represented by the American Red Cross, which has a vital interest in public health. Professional health workers are represented by the American Public Health Association and the Conference of State and Provincial Health Authorities of North America. The interests and enterprises of the nursing profession are represented by the National Organization for Public Health Nursing. The national government is represented by the United States Public Health Service and the United States Children's Bureau, which are advisory members of the Council. The American Child Health Association represents activities in that field. The interests of special groups for promoting mental hygiene and social hygiene and for combating tuberculosis, cancer and heart disease, are represented respectively, by the National Committee for Mental Hygiene, the American Social Hygiene Association, the National Tuberculosis Association, the American Society for the Control of Cancer, and the American Heart Association. The associate member is the Women's Foundation for Health."

In every case but one, annual reports or published descriptions of the activities of the organizations were analyzed. In the case of the American Heart Organization, certain brief bulletins distributed by that society for educational purposes were analyzed.

In addition to the description of the activities of the American Society for the Control of Cancer, one of their publications distributed for educational purposes was also analyzed.

However, since some of these organizations deal with special problems, and since all the other sources were comprehensive and general, it seemed that in an analysis in which frequency of mention was the method used for summarizing results, the use of specialized sources might invalidate the conclusions. Consequently the data from these sources were discarded. A total of 608 items had been recorded from these sources, comprising 5.7 per cent of the original items recorded.

There are one hundred and sixteen groups of problems resulting from the analysis made in this study. Originally, twenty-seven of these groups were mentioned one hundred times or more. These twenty-seven groups of problems were the highest ranking of the one hundred and sixteen groups. After the data from the voluntary health organizations were discarded, the same groups of problems were in the highest ranking twenty-seven as before, but the order of ranking within the twenty-seven was somewhat changed. Problems dealing with care of the circulatory system, cancer, and vision were the most noticeable changes. However, relationship between the ranks of these twenty-seven problems before and after the material was discarded is expressed by the ratio, +.9635.

The one hundred and sixteen problems recorded in this study have been classified in ten divisions. The rank order of the ten divisions remained the same after discarding this material. In this connection it is interesting to note that the correlation between the ranking of these ten divisions as shown by the totals for the whole study, and the ranking in the discarded group of sources, was +.8893. The correlation between the ranking of these ten divisions according to the data from the personal hygiene books and the ranking according to the discarded sources was +.8135. The correlation between the ranking according to the annual reports of the Surgeon General, and according to the discarded sources was +.8799.

published, either for the first time or in revised editions, in 1924 or 1925.

A brief statement of the positions held by the authors of these books indicates that they are qualified to speak with authority on the problems of personal hygiene. Jesse F. Williams, M.D., is Professor of Physical Education, at Teachers College, Columbia University. Allan J. McLaughlin, M. D., Surgeon in the United States Public Health Service, was formerly President of the American Public Health Association. His book is one of the National Health Series, edited and approved by the National Health Council. Irving Fisher, Professor of Political Economy, Yale University, and Eugene Lyman Fisk, M.D., Medical Director of the Life Extension Institute, are internationally recognized authorities upon these subjects. Their book was authorized by and prepared in collaboration with the Hygiene Reference Board of the Life Extension Institute. (In 1919 over 100,000 copies had been sold and the book was in its fifteenth edition). Roger I. Lee, M.D., was Professor of Hygiene in Harvard University at the time of writing his book. Kenelm Winslow, M.D., is Attending Physician to Seattle City Hospital and King County Hospital, Washington, and formerly Assistant Professor of Comparative Therapeutics at Harvard University, and has been a practicing physician for a quarter century. William S. Sadler, M.D., formerly Professor at the Post Graduate Medical School of Chicago, is Director of the Chicago Institute of Research and Diagnosis, Fellow of the American College of Surgeons, etc.

Division VII

Sources in this division were selected from the publications of the Metropolitan Life Insurance Company, an outstanding commercial organization which takes a constructive part in preventive health work, and from the publications of the Life Extension Institute, the largest, self-supporting organization representing socialized medicine. From many available bulletins and pamphlets five were selected which seemed to summarize the experience and the point of view of these organizations, and which, it seemed, would serve as guides in drawing conclusions. All of these bulletins deal with those problems which are the strategic points in the effort to prolong life, as conceived by the

Metropolitan Life Insurance Company and the Life Extension Institute.

Key 20.—Lengthening Life Through Insurance Health Work—A Study of the Trends of Mortality Among Metropolitan Industrial Policyholders, 16 pp., 1924.

This pamphlet consists of a brief introduction which is followed by thirteen pages of significant graphs and charts.

Key 21.—Dublin, Louis I., Statistician, Metropolitan Life Insurance Company, New York. "Some Problems of Life Extension." A paper read before the Section on Preventive Medicine and Public Health, American Medical Association, Chicago, June 13, 1924, 23 pp.

Key 22.—Fisk, Eugene Lyman, M.D., Medical Director, Life Extension Institute. "Diseases of Mature Life." Paper read at Conference of Sanitary Officers, New York State Department of Health, June 1919, 7 pp.

Key 23.—Fisk, Eugene Lyman, M.D. "On Prolonging Human Life," Reprinted from *The North American Review,* July, 1920, 11 pp.

Key 24.—Fisk, Eugene Lyman, M.D. "Extending the Health Span and Life Span After Forty." Reprinted from *The Medical Times,* June, 1923, 21 pp.

It will be observed that all of the sources described in the preceding pages deal with a broad range of problems concerning the health of human beings. They are comprehensive rather than selective, and none of them attempts to specialize on any one group of problems.

For purposes of comparison an analysis was also made of some programs or courses of study in actual use in the schools.

In the process of constructing the Gates-Strang Health Knowledge Test, twenty recent courses of study and fourteen textbooks on health were analyzed by Miss Strang. By Miss Strang's courtesy, some of the results of this analysis were used, as described in Chapter XIII. The courses of study and the texts anayzed by Miss Strang were as follows:

Courses of Study

Syllabus and Course of Study in Civics together with Health Program Outline. Bridgeport Public Grammar Schools, Bridgeport, Conn., 1919.

A Tentative Course of Study in Health Education for the Cincinnati Public School, Ohio, 1923.

Annual Report of the Columbus Public Schools, Columbus, 1921.

Course of Study in Health Instruction, Elementary Schools, Detroit Public Schools, Mich., 1922.

Course of Study in School Health. Hygiene and Physiology. Grades I-VIII, Harrisburg, Pa., 1923.

Course of Study in Grades I to IV, Department of Physical Education and Hygiene, Los Angeles City Schools, Calif., 1923.

Course of Study, Syllabus, Elementary Schools, State of Michigan Department of Public Instruction, Lansing, Mich., 1922.

Syllabus on Health, Public Schools of Newark, N. J. Monograph No. 6, 1920.

Health Education, Syllabus in Hygiene, University of the State of New York, 1922.

Course of Study Series No. 27. Health Education for Kindergarten and Grades 1-4, Oakland, Calif., 1922.

Course of Study for the Elementary Schools, State of Oregon, 1922-1924.

A Course of Study in Terms of Children's Activities. For Kindergarten and Primary Grades—By Reynolds, M. H., Seattle, Wash., 1922.

Course of Study for the Elementary Schools of South Dakota, 1922.

Courses in Dietetics, Hygiene and Nursing for High School. Bulletin 114, Texas, 1920.

Elementary Course of Study, Trenton, N. J., 1922.

Course of Study for the Rural and Elementary Schools of Vermont. Physiology and Hygiene, 1921.

Graded Course in Health Training and Instruction, Elementary and Junior High School, Washington, D. C., 1922.

Suggestive Course of Study for the Rural Schools of Wyoming.

Texts

Hallock, Grace and Winslow, C. E. A. *The Land of Health.* Charles E. Merrill Co. 1922.

Winslow, C. E. A. *Healthy Living,* Book I, Enlarged Edition. Charles E. Merrill Co. 1922.

Winslow, C. E. A. *Healthy Living,* Book II. Charles E. Merrill Co. 1922.

O'Shea, M. V. and Kellogg, J. H. *The Body in Health.* The Macmillan Co. 1923.

O'Shea, M. V. and Kellogg, J. H. *Building Health Habits.* The Macmillan Co. 1923.

O'Shea, M. V. and Kellogg, J. H. *Health and Cleanliness.* The Macmillan Co.

O'Shea, M. V. and Kellogg, J. H. *Making The Most of Life.* The Macmillan Co. 1921.

Hutchinson, Woods. *The Child's Day.* Houghton, Mifflin, 1920.

Hutchinson, Woods. *A Handbook of Health.* Houghton Mifflin, 1922.

Hutchinson, Woods. *Community Hygiene.* Houghton Mifflin, 1920.

Cuzzort, Belva and Trask, John W. *Health Lessons.* D. C. Heath and Co. 1923.

Cuzzort, Belva and Trask, John W. *Primer of Personal Hygiene.* D. C. Heath and Co. 1923.

Ritchie, John W. *Primer of Sanitation.* World Book Co. 1921.

Ritchie-Caldwell. *Primer of Hygiene.* Revision, World Book Co. 1920.

Publications of The American Child Health Association. 1921.

Dansdill, Theresa. *Health Training in the Schools.* National Tuberculosis Association. 1923.

An analysis was also made of the problems considered in ten sets of materials, representing the work in health education actually done in classrooms, which had been submitted to the American Child Health Association in the spring of 1924 by teachers entered in a contest for scholarship awards. These materials came from Oklahoma, New York, Iowa, Indiana, Tennessee, District of Columbia, Georgia, Kentucky, and New Jersey; and represented work from a "preliminary" grade, the first, second, third, fourth, fifth, sixth, and eighth grades, and from two junior high schools. The age range was from five to sixteen years.

A great variety of materials was found in these exhibits, including such items as notebooks, themes, songs, poems, essays, posters, letters, pictures, photographs, charts, bulletins, diaries, height-weight graphs, outlines of the term's teaching program, records of health examinations, sample lessons, and so on.

It is necessary to explain the method used in analyzing the sources in this study.

As has been said, it was the purpose of this study to formulate a list of health problems which would be a useful basis for curriculum construction. The first purpose in analyzing a source, accordingly, was to record the problems discussed. The questions discussed in relation to each problem were also recorded.

The first definition of a problem in the Standard Dictionary is "A question for discussion and settlement, a matter of uncertainty requiring further light to determine the truth, especially when difficult or uncertain of solution." However, the use of the word "problem" in this study is more accurately defined by the definition of a problem in geometry "a proposition in which some operation or construction is required." The health problems listed in this study are situations in which some activity is required in order that health may be maintained or improved.

Each problem discussed was recorded on a separate card, as the source being analyzed was read. Since a problem may be stated in very general terms, as, "to prevent communicable disease," or since each specific aspect may be considered a separate problem, as "to prevent typhoid," it was necessary to decide upon

some unit to use in making the analysis. In most cases, the chief problem discussed in each paragraph was recorded, making the paragraph the decisive unit. In relatively few instances, where the same aspect of a problem was discussed at length, this was not the case.

The questions discussed in relation to each problem were also recorded. For example, a discussion of the problem of prevention of typhoid usually involved such questions as: What are the mortality rates from typhoid? Why have they declined? What are the accepted means of controlling typhoid? The problem of selecting a diet of adequate caloric value involves such questions as: What are the different calory requirements for different ages; for persons engaged in different kinds of activity?

Cards used for recording the problems were regular index cards, white, ruled, approximately three by five inches. In the upper left hand corner was recorded the key number of the source reference being analyzed. The cards for each source were numbered serially beginning with one, and this serial number was placed in the upper right-hand corner. At the extreme left of the card was the page number in the source reference for the location of the problem recorded. The amount of space given the problem was recorded just to the right of the page number, less than one-eighth of a page being indicated by a check. This left about three-quarters of the card free for the statement of the problem.

The same system was used for recording questions, excepting that a colored card was used instead of a white card.

A sample card is shown below:

3		248
		To control bubonic plague
130	1/3	

The source references were analyzed, approximately in the order indicated by their key numbers.

When this analysis was completed, the cards upon which problems and questions were recorded, were assorted and classified according to problems, the questions being grouped with the problem to which they were related. The arrangement was alphabetical, beginning "accidents," "adenoids," "alcohol," etc.

In classifying the cards, the sources were classified in the order in which they had been analyzed, with the result that the first card placed in any group indicated the first source in which that problem was mentioned.

In order to summarize the records and to study them carefully, it was necessary to put them into more easily handled form than the card records. For this purpose large sheets of quarter inch cross-barred paper were used. Each of the main groups of problems was recorded upon a separate sheet. It was convenient to arrange the cards within a group, placing all those dealing with the same phase of a problem together before attempting to make the record on the large sheet of paper. The problems, and the questions related to them, were written at the left-hand side of the sheet. At the top of the sheet, the key number of each reference was placed at the head of a column. The number of times each problem was discussed in each reference was indicated by a number and a check placed in the appropriate column; questions were indicated by crosses instead of checks. This method was chosen instead of the method of recording the number of pages devoted to the problem because it was simpler. The accompanying illustration shows the method used.

Some rearrangement of main groups seemed advisable, and this arrangement gave the one hundred and sixteen headings under which the records are summarized in the following chapter. These were grouped in ten main divisions. The rearrangement was according to related topics, as shown in Table I, instead of being alphabetical, as at first. It should be said that the grouping decided upon was used for convenience in handling the materials in this study in presenting related problems, and is not necessarily to be considered either as a suitable grouping for arrangement of topics in courses of study, or as a universally applicable classification of public health problems. Some of the

topics might be classed in more than one group, but they were always grouped with that division with which they seemed primarily concerned.

The lists of problems in Chapters III to XII are abbreviated in one sense. In making the first analysis, each phase of a problem was recorded as a separate problem. The tabulated results in Chapter II represent a summary of the total items as first recorded. However, many of the specific problems differed so minutely from each other that it seemed wise, for purposes of clarity and emphasis, in Chapters III to XII, which contain no statistical treatment of problems, to restate these similar, only slightly differing, problems as one. The result is that the original 2,486 different problems summarized in Table I, the first col-

RECORD SHEET ILLUSTRATING METHOD USED IN RECORDING AND SUMMARIZING THE NUMBER OF ITEMS DEALING WITH EACH PROBLEM

Mouth Hygiene	Source														Total Problems	Total Questions
	1	2	3	4	5	6	14	15	16	17	18	23	24	25		
To brush teeth properly							V	V	V	V					4	
Relation of abscessed teeth to rheumatism and endocarditis							X									1
Relation of tooth defects to school progress					X											1
To secure adequate dental service							V	V	V	V[2]		V			6	

Malaria	1	2	3	4	5	6	7	8	8		18	19	20	Total Problems	Total Questions
To secure adequate reporting of cases						V								1	
Value of quinine treatment				X[2]		X			X		X[2]	X			7
To control mosquito breeding		V[31]	V	V	V	V	V							36	

umn, were reduced to a statement of 1,437 different problems in Chapters III to XII.

Before presenting these detailed lists of problems in Chapters III to XII, it seems wise to give a description of the large groups of problems, indicating the sources in which they were found. This, it is hoped, will so emphasize the important points that in studying the detailed lists of problems which follow the reader will not lose sight of essentials.

CHAPTER II

STATISTICAL ANALYSIS OF RESULTS

The problems in the list resulting from the analysis made in this study are arranged in one hundred and sixteen groups, which have been classified in ten divisions. As has been said before, an attempt was made in most instances in this arrangement to group related problems, but this grouping is not necessarily to be considered either as a suitable grouping for arrangement of topics in courses of study, or as a classification of health problems for professional public health workers.

The order of presentation is, roughly, that problems concerned with the health of the future race are presented first; then individual problems; then community problems.

The headings of the ten divisions are Racial Hygiene, Personal Hygiene, Mental and Nervous Hygiene, Degenerative Diseases, Control of Infection, Community Hygiene, Use of Professional Health Service, Temperance Education, Safety Education, and last, a group of Interpretative Materials which do not present new problems but present a point of view, or help in interpreting the problems already presented.

The five groups of problems in the Racial Hygiene division are eugenics, sex hygiene, venereal diseases, child health, and maternity hygiene. Four of these groups—those last named—would probably be placed under other headings in a classification for public health workers; venereal diseases would be classed, for example, with the communicable diseases. However, the grouping here used was deliberately selected because it seemed to clarify the question of what educational treatment should be accorded these problems in the schools. This question is discussed further in Chapter III, but this brief explanation is offered here lest this grouping should seem unreasonably arbitrary.

The order of the groups of problems in the Personal Hygiene division progresses in a general way, from the problems con-

cerned with fundamental life processes to those related to the care of specialized organs of the body.

There are no subdivisions under mental hygiene. This division might have been made a subdivision under personal hygiene, but was given a separate place for the purpose of emphasis.

The division dealing with Degenerative Diseases and Cancer contains only that part of the discussion of problems concerned with degenerative diseases, which was presented in such general terms that it was impossible to ascertain specifically what degenerative diseases were being discussed. The items dealing with specific degenerative diseases are grouped for the most part, in the personal hygiene division. For example, problems of degenerative heart diseases are presented under "Circulatory System; Care and Prevention of Defects." All of the problems dealing with cancer are presented in this division.

In the Control of Infection division, there are five classes of diseases, grouped according to similarity in means of transmission, since it is prevention of transmission with which the educational program is primarily concerned. The sixth group includes Local Infections, and the seventh a miscellaneous grouping.

The Community Hygiene section presents problems of administration, and of control of environment, with the exception of those already discussed in the divisions of Racial Hygiene and Control of Infection.

No explanation is needed of the grouping in the remaining divisions.

Table I, which follows, gives for each division and the groups in the division the number of different problems recorded in this analysis; the total number of times these problems were mentioned; the number of different questions discussed in relation to the problems, and the total mention of these questions; the total items, that is, the sum of the total problems and total questions for each group; the number of sources in which discussion of each group of problems occurred, and the number of divisions of sources represented. It will be remembered that there were twenty-four different sources analyzed, which fell into seven divisions of sources.

In all of the statistical treatment which follows in this and in

TABLE I

Problem	Different Problems	Total Problems	Different Questions	Total Questions	Total Items Sum of Columns 2 and 4	Sources	Divisions
	1	2	3	4	5	6	7
I. Racial Hygiene							
Eugenics	9	14	32	37	51	7	3
Sex Hygiene	49	81	31	37	118	11	4
Venereal Diseases	140	403	79	161	564	16	6
Child Health	92	336	48	68	404	17	7
Maternity Hygiene	7	7	5	6	13	6	4
Total	297	841	195	309	1,150		
II. Personal Hygiene							
Nutrition and food and prevention of defects of nutrition	216	452	253	366	818	18	7
Big Muscle Activity and prevention of skeletal and muscular defects	41	69	112	164	233	11	4
Sleep	25	44	7	12	56	5	1
Work	8	11	5	8	19	2	1
Fatigue	10	12	11	11	23	2	2
Circulatory system and prevention of diseases of circulatory system	17	86	84	105	191	6	4
Excretion and Elimination of waste and prevention of kidney diseases	39	60	73	100	160	10	5
Skin	28	58	26	33	91	7	3
Bathing	16	34	16	22	56	8	3
Clothing	28	54	27	46	100	7	2
Glands of internal secretion including prevention of Goiter and Diabetes	21	46	25	36	82	9	6
Mouth Hygiene	43	94	35	53	147	12	3
Nose and Throat	6	6	2	2	8	3	2
Voice	1	1	5	5	6	1	1
Ears	12	21	29	30	51	4	2
Adenoids	1	7	17	19	26	5	3
Tonsils	7	12	9	15	27	5	1
Asthma	2	6	10	13	19	4	3
Hay Fever	2	17	13	19	36	5	3
Vision	38	70	33	33	103	8	4
Headache	15	19	48	67	86	2	2
Feet	12	15	8	23	38	7	2
Hands	9	10	3	3	13	3	1
Hair	15	22	13	16	38	5	1
Total	622	1,224	864	1,201	2,425		

TABLE I (*Continued*)

Problem	Different Problems	Total Problems	Different Questions	Total Questions	Total Items Sum of Columns 2 and 4	Sources	Divisions
	1	2	3	4	5	6	7
III. Mental and Nervous Hygiene	82	172	76	111	283	16	5
IV. Degenerative Diseases							
(general discussion)	16	28	24	61	89	7	3
Cancer	5	18	33	93	111	12	6
Total	21	46	57	154	200		
V. Control of Infection							
Respiratory							
Tuberculosis	89	219	43	77	296	18	7
Colds	29	56	55	90	146	9	3
Pneumonia	21	46	22	46	92	14	6
Other respiratory diseases	4	4	2	2	6	2	2
Bronchitis	3	3	8	8	11	2	2
Influenza	18	46	21	30	76	11	5
Diphtheria	13	48	18	42	90	14	6
Scarlet Fever	7	23	19	35	58	11	6
Measles	8	21	12	22	43	11	6
Whooping Cough	9	23	13	23	46	9	5
Meningitis	16	40	7	20	60	12	6
Poliomyelitis	12	47	8	19	66	10	6
Mumps	4	12	5	8	20	7	4
Encephalitis	2	8	1	1	9	3	3
Total	235	596	234	423	1,019		
Intestinal							
Typhoid	23	80	26	57	137	17	7
Hookworm	10	47	14	29	76	14	5
Diarrhoea	3	3	1	1	4	2	2
Dysentery	5	14	20	30	44	8	4
Cholera	4	18	17	27	45	12	5
Total	45	162	78	144	306		
Insect Borne							
Malaria	36	212	39	81	293	15	5
Plague	46	196	23	33	229	11	5
Yellow Fever	14	55	15	30	85	12	5
Typhus Fever	12	43	8	15	58	11	5
Dengue	2	8	7	12	20	9	5
Deer Fly	2	16	5	8	24	5	2
Rocky Mt. Spotted Fever	2	20	6	8	28	8	3
Sleeping Sickness	1	3	4	7	10	3	2
Relapsing Fever	5	6	2	2	8	2	2
Total	120	559	109	196	755		

TABLE I (*Continued*)

Problem	Different Problems	Total Problems	Different Questions	Total Questions	Total Items Sum of Columns 2 and 4	Sources	Divisions
	1	2	3	4	5	6	7
Local Infections							
Local Infections	12	17	35	45	62	6	2
Appendicitis	2	2	3	3	5	3	2
Septicemia and unspecified Streptococcus infection	2	6	1	1	7	4	3
Septic Sore Throat	1	4	1	2	6	3	3
Rheumatism	13	14	18	18	32	4	3
Total	30	42	58	69	112		
Contact Diseases							
Smallpox	12	58	22	41	99	16	6
Chickenpox	4	12	6	8	20	6	3
Parasitic Skin Infections	9	9	0	0	9	2	2
Trachoma	4	31	3	9	40	7	3
Leprosy	8	42	7	16	58	9	4
Total	37	152	38	74	226		
Wound Infections							
Anthrax	8	19	5	9	28	9	4
Tetanus	6	21	13	19	40	9	5
Rabies	11	30	9	26	56	9	4
Total	25	70	27	54	124		
Miscellaneous							
Foot and Mouth Disease	1	1	0	0	1	1	1
Malta Fever	2	5	1	1	6	3	3
Yaws	1	1	0	0	1	1	1
General Discussion	36	61	38	48	109	14	5
Total	40	48	39	49	117		
Totals	532	1,650	583	1,009	2,659		
VI. Community Hygiene							
Public Health Administration	179	478	31	51	529	14	5
Quarantine	38	87	13	23	110	1	2
Immigration	10	33	20	56	89	8	3
Vital Statistics	21	141	39	61	202	14	6
Disinfection and Fumigation	13	58	21	23	81	9	4
Milk Supplies	25	50	21	31	81	10	4
Food Supplies	15	38	1	1	39	8	5
Water Supply	24	79	13	21	100	15	5

TABLE I (*Continued*)

Problem	Different Problems	Total Problems	Different Questions	Total Questions	Total Items Sum of Columns 2 and 4	Sources	Divisions
	1	2	3	4	5	6	7
VI. Community Hygiene (Con.)							
Sewage Disposal	27	94	22	31	125	11	5
Garbage	3	5	3	5	10	5	4
Street Cleaning	4	4	0	0	4	3	3
Control of Insects	13	30	10	11	41	8	4
Housing	13	16	4	4	20	6	4
Plumbing	1	1	0	0	1	1	1
Heating	1	2	3	12	14	2	1
Ventilation	42	96	59	98	174	12	5
Industrial Hygiene	92	211	62	85	296	13	6
Transportation	30	94	1	2	96	7	3
National Parks	10	28	1	2	30	3	1
Laboratory	27	79	5	5	84	9	5
Biological Products	1	50	1	2	52	6	2
Research	45	57	0	0	57	7	2
Total	634	1,711	335	524	2,235		
VII. Use of Professional Health Service							
Medical Service	14	24	35	38	62	9	5
Health Examination	4	9	27	41	50	13	6
Nursing	17	26	7	7	33	5	4
Hospitals	4	31	2	6	37	9	4
Health Centers	18	24	6	8	32	5	3
Nostrums and Quackery	10	34	27	33	67	9	5
Total	67	148	104	133	281		
VIII. Temperance Education							
Alcohol	4	14	20	50	64	9	4
Narcotics	10	38	19	24	62	13	5
Tobacco	2	6	27	47	53	5	2
Total	16	58	66	121	179		
IX. Safety Education							
Accident Prevention	39	45	6	8	53	6	4
X. Interpretative Material							
Public Health Education	84	162	18	30	192	17	6
Rural Health	44	99	33	64	163	11	3
Economic and Social	15	23	22	30	53	10	5
Life Extension	23	35	43	64	99	12	4
Health	5	5	17	51	56	6	4
Public Health History	0	0	6	10	10	3	3
Disease (unspecified)	5	7	33	41	48	7	6
Total	176	331	172	290	621		
Grand Totals	2,486	6,226	2,458	3,860	10,086		

the remaining chapters, it is the totals in column five which are used. This column, it may be repeated, is the sum of the total frequency of occurrence of both problems and questions. It represents the entire number of mentions concerning any problem and related questions, including duplications.

A list of the twenty-seven groups of problems ranking highest according to the total number of items recorded is given in Table II. The "total number of items" means the sum of all the mentions recorded for a problem and related questions. The total number of items is given in column five of Table I. Table II includes all the groups for which one hundred or more items were recorded.

Whether or not this ranking is significant either as an indication of the relative importance of the problems or as an indica-

TABLE II

TWENTY-SEVEN GROUPS OF PROBLEMS RANKING HIGHEST ACCORDING TO TOTAL NUMBER OF ITEMS RECORDED

(See Table I, Column 5)

Rank	Group of Problems	Total Items
1	Nutrition	818
2	Venereal Diseases	564
3	Administration	529
4	Child Health	404
5.5	Tuberculosis	296
5.5	Industrial Hygiene	296
7	Malaria	293
8	Mental Hygiene	283
9	Big Muscle Activity	233
10	Plague	229
11	Vital Statistics	202
12	Public Health Education	192
13	Circulatory System	191
14	Ventilation	174
15	Rural Health	163
16	Elimination of Waste	160
17	Mouth Hygiene	147
18	Colds	146
19	Typhoid	137
20	Sewage Disposal	125
21	Sex Hygiene	118
22	Cancer	111
23	Quarantine	110
24	General Discussion, Infections	109
25	Vision	103
26.5	Water Supply	100
26.5	Clothing	100

tion of the relative amount of attention to be given these problems in the schools, is a debatable question. To conclude that the ranking in Table II indicates that nutrition should receive six times the attention in the curriculum that is given to mouth hygiene would involve assumptions which no thoughtful educator would wish to accept. As Rugg says, "It should be emphasized that the tabulation of the contents of these frontier books does not provide us with a criterion for deciding how much time or attention to give to any one problem, topic or question. . . . That is a teaching problem, an experimental matter, not at all a question of whether or not the points under consideration shall be included in the curriculum." [1]

In other words, while we assume that an objective analysis of health needs facilitates the selection of subject matter that is important, we insist that the numerical results of such an itemized analysis as has been made in this study must be interpreted cautiously when drawing conclusions about assigning the proper amount of attention to these problems in the curriculum.

Similarly, to say that the fact that nutrition received approximately six times the amount of discussion given to mouth hygiene is an indication that problems of nutrition are six times as important as problems of mouth hygiene would involve assumptions for which there is no adequate basis. For example, it would involve the assumption that the writers of the books and reports which were analyzed consciously made space allotments proportionate to the relative importance of the problems. This might have a slight basis of fact, in some of the sources analyzed, but certainly does not apply to most of them. It is only in a very general way, that the amount of attention given these groups of problems may be assumed to indicate the degree of their importance as health problems. In Table III are listed the ten groups ranking lowest. With a few exceptions, it is true that the problems in Table II are more important health problems than those in Table III. Those ranking highest affect more people, or are more serious in their nature than those in Table III.

Problems of maternity hygiene are undoubtedly of greater importance than indicated by the ranking of that group. The

[1] Rugg, H. O. "Problems of Contemporary Life as the Basis for Curriculum Making in the Social Studies." *The Twenty-Second Yearbook of the National Society for the Study of Education*, Ch. XV, Part II, Public School Publishing Co., Bloomington, Ill., 1923, p. 270.

low rank of this group is probably due to the fact that much of the discussion of maternity hygiene involves child hygiene as well and was classified under the latter heading.

TABLE III

TEN GROUPS OF PROBLEMS RANKING LOWEST

Rank	Group of Problems	Total Number of Items Recorded
108.5	Voice	6
108.5	Septic Sore Throat	6
108.5	Malta Fever	6
108.5	Other Respiratory Diseases	6
111	Appendicitis	5
112.5	Diarrhoea	4
112.5	Street Cleaning	4
115	Yaws	1
115	Plumbing	1
115	Foot and Mouth Disease	1

This question of the relative importance of health problems is discussed at greater length in Chapter XIV. The attempt here is, first of all, to present the data which will best picture the actual recorded results of the analysis made. The interpretation of results follows later.

Since the sources analyzed were deliberately selected to represent a wide variety of material, a study of the problems emphasized in the different groups of sources is necessary in interpreting the results of this analysis. It will be recalled that the twenty-four sources analyzed are grouped in seven divisions. Table IV shows the ten groups of problems ranking highest in each of the seven source divisions.

Division I is the analysis of Mortality reports of the Bureau of Census. The method used in analyzing this source, as has been explained, was to record each cause of death as one problem, recording questions of age or sex incidence, for example, only in exceptional cases. Consequently, there were only one hundred and ninety-four items recorded altogether for this source, and these items were distributed quite regularly among fifty-seven different problem groups. Consequently, the ranking of the items in this division cannot be very significant. It should also be explained that the high ranking of "accident prevention" is due to the arrangement of the list of causes of death used by

TABLE IV

THE TEN GROUPS OF PROBLEMS RANKING HIGHEST IN EACH OF THE SEVEN DIVISIONS OF SOURCES ANALYZED

Rank	Mortality Reports	U.S.P.H.S. Bibliography of Publications	Annual Reports of the Surgeon-General	Public Health Books	Report of the A.P.H.A.	Personal Hygiene Books	Metropolitan and Life Extension
	I	II	III	IV	V	VI	VII
1	Accident Prevention	Administration	Venereal Diseases	Administration	Child Health	Nutrition	Life Extension
2	Circulatory System	Venereal Diseases	Industrial Hygiene	Child Health	Administration	Big Muscle Activity	Degenerative Diseases
3	Glandular Defects	Malaria	Administration	Industrial Hygiene	Tuberculosis	Mental Hygiene	Health Examination
4	Venereal Diseases	Child Health	Plague	Public Health Education	Venereal Diseases	Circulatory System	Tuberculosis
5	Cancer	Nutrition	Child Health	Life Extension	Nursing	Ventilation	Child Health
6	Nutrition	Plague	Malaria	Vital Statistics	Milk Supplies	Elimination of Waste	Sex Hygiene
7	Mental Hygiene	Vital Statistics	Quarantine	Mental Hygiene	General Communicable Diseases	Tuberculosis	Focal Infections
8	Child Health	Tuberculosis	Rural Health	Nutrition	Housing	Colds	Vital Statistics
9	Bronchitis	Rural Health	Nutrition	Tuberculosis	Food Supplies	Mouth Hygiene	Medical Service
10	Pneumonia or Rheumatism or Maternity Hygiene or Elimination of Waste	Biological Products	Immigration	Venereal Diseases or Nostrums and Quackery	Laboratories	Venereal Diseases	Circulatory or Cancer or Accident Prevention or Public Health Education

the Census Bureau. In this list many separate causes of accidents are listed, and each of these was recorded separately in the analysis.

Listing the first ten problems for each of the seven divisions would give chances for mention of seventy different problems. Rank order was determined by the total frequency of mention, as shown by the sums recorded in column five of Table I, which gives the total number of mentions for each problem and related questions including duplicates. However, in Divisions I, IV, and VII, there were several problems having the same rating, each of which might have been ranked tenth. In these cases, all the problems were listed, giving a total of seventy-seven instead of seventy.

If all the divisions had given the same emphasis to the same problem groups, there would have been only ten different problem groups listed. If there had been no agreement, seventy different problem groups would have been listed. As a matter of fact, there were forty-one different problem groups in the total of seventy-seven, indicating considerable variety of emphasis in the different source divisions. Twenty-four problem groups appeared only once; nine appeared twice; three, three times; one, four times; two problems, five times; and two problems, six times among the first ten problems in the division. Table V summarizes these facts.

An examination of Table IV shows that in no two of the source divisions did the same ten problem groups rank in the first ten. Seven groups appear both in Divisions II and III, and six are alike in Divisions II and IV, but comparison of any other two Divisions shows five or less like problem groups, appearing in both divisions. Table IV reveals several other facts which further indicate the varied emphasis given by different source divisions.

The only problem group which ranks first in more than one source division is administration. This is a group of problems dealing with technical affairs of administering public health programs, and receives a large amount of attention in Divisions II and IV.

A comparison of the problems in Divisions III and VI is instructive, first, because these two divisions together comprise over sixty per cent of the total recorded items in the analysis,

TABLE V

PROBLEM GROUPS WHICH APPEAR IN MORE THAN ONE SOURCE DIVISION IN TABLE IV

Problem Groups	Number of Divisions in Which Problem Group Appeared in Table IV
Child Health; Venereal Diseases	6
Nutrition; Tuberculosis	5
Administration	4
Circulatory System; Mental Hygiene; Vital Statistics	3
Industrial Hygiene; Life Extension; Malaria; Accident Prevention; Elimination of Waste; Plague; Rural Health; Cancer; Public Health Administration	2

and, second, because they represent distinctly different types of authority.

There are only two problem groups which rank among the first ten in both divisions; these are nutrition and venereal diseases. Venereal Disease ranks first in Division III, and tenth in Division VI. Nutrition ranks ninth in Division III and first in Division VI.

In Division VII the group "Life Extension" ranks first. This heading covers the items discussing in general the possibility of lengthening life and improving its quality, and should be classed more as material presenting a point of view, than as a group of

TABLE VI

NUMBER OF PROBLEM GROUPS DISCUSSED IN EACH SOURCE DIVISION*

Division	Source	Number of Groups of Problems Discussed
I	Census Reports	57
II	U. S. P. H. S. Publications	78
III	Annual Reports of Surgeon-General	75
IV	Public Health Books, Fisher and Moore	77
V	A. P. H. A. Report	36
VI	Personal Hygiene Books	95
VII	Life Extension and Metropolitan	22

* Total groups of problems in all divisions combined was 116.

problems. The new emphases of importance in this group are the emphases on health examinations and the use of expert medical service; upon sex hygiene and upon the prevention of focal infections. It is true that all these items appear in some of the other divisions, but in no other division do they rank among the first ten.

We may conclude then, that the selection of varied sources was essential in order that the interpretation of the results of an analysis should be fair and unbiased.

Computation of correlation coefficients is not a satisfactory way of describing the relative positions of the problem groups in the different source divisions. In Appendix A is given a list of the one hundred and sixteen problem groups, with the number of items recorded for each problem in each source division, and also the rank of the problem according to the number of items recorded.

However, there is no source division in which all of the one hundred and sixteen problem groups are discussed. Table VI shows the number of problem groups discussed in each source division. Ninety-five of the one hundred and sixteen groups were discussed in the personal hygiene books (Division VI) but only twenty-two in Division VII.

A correlation coefficient was computed for the relative rating of the problems in Divisions III and VI (using Pearson's Product-Moment formula). The value of r was $+.16$, with a P.E. $\pm.06106$, a result that is practically meaningless, because of the unsuitability of the data for such statistical treatment.

The relationships between the second, third, and fourth divisions are more alike, since the reports and books in these divisions are based upon very much the same data.

Since the sources analyzed were deliberately chosen to represent differing points of view, it is not surprising that the emphases of the various source divisions should differ.

However, although there are great variations in the details of problems presented, there is, from a broad, general point of view, a significant agreement. For purposes of a convenient summary, the one hundred and sixteen problem groups have been classified into ten large groups, which have been described on page 15.

Table VII presents the total number of items recorded for

TABLE VII

NUMBER OF ITEMS RECORDED FOR EACH OF THE TEN PROBLEM DIVISIONS IN EACH SOURCE DIVISION

Problem Division	I	II	III	IV	V	VI	VII	Totals
Racial Hygiene	20	213	386	150	113	247	21	1,150
Personal Hygiene	47	123	108	144	2	1,996	5	2,425
Mental and Nervous Hygiene	7	20	38	36	1	181	0	283
Degenerative Diseases	8	1	8	8	0	142	33	200
Control of Infection	81	461	627	170	97	1,204	19	2,659
Community Hygiene	2	447	879	350	143	410	4	2,235
Professional Health Service	0	32	26	101	24	70	28	281
Temperance Education	2	15	5	36	2	119	0	179
Safety Education	25	2	0	1	0	23	2	53
Interpretative Material	2	89	158	165	10	155	42	621
	194	1,403	2,235	1,161	392	4,547	154	10,086

each of these ten groups, in each source division, and also the grand totals. Table VIII gives the ranking of nine of the groups, according to number of items recorded. The tenth group, Interpretative Material, was excluded from the list in calculating the order of rank, since this is not really a group of problems. Correlation coefficients were computed, using the formula: $\rho = 1 - \frac{6SD^2}{n(n^2-1)}$. Coefficients were computed for the relationship between the ranking of the groups according to total items recorded, and the ranking in each source division; between the ranking of groups in Source Division III and the other divisions, and also for the relationship between the ranking of groups in Source Division VI and the other divisions. The coefficients are given in Table IX.

It will be seen from Table VII that there are seven instances in which there are no items recorded for a large problem group. Professional health service is not discussed in Division I; safety education is not discussed in Divisions III or V; mental hygiene is not discussed in Division VII; degenerative diseases in Division V, nor temperance education in Division VII. This somewhat invalidates the computed correlation coefficients. However, it is possible to draw the very general conclusion that there is agreement, rather than disagreement, in the relative emphases given these nine divisions of problems by the different sources.

TABLE VIII

RANKING OF NINE PROBLEM DIVISIONS ACCORDING TO NUMBER OF ITEMS RECORDED, IN THE TOTALS, AND IN EACH SOURCE DIVISION*

Problem Divisions	Total	I	II	III	IV	V	VI	VII
Control of Infections	1	1	1	2	2	3	1	4
Personal Hygiene	2	2	4	4	4	5.5	2	5
Community Hygiene	3	7.5	2	1	1	1	3	6
Racial Hygiene	4	4	3	3	3	2	4	3
Mental and Nervous Hygiene	5	6	6	5	6	7	5	8.5
Professional Health Service	6	9	5	6	5	4	8	2
Degenerative Diseases	7	5	9	7	8	8.5	6	1
Temperance Education	8	7.5	7	8	7	5.5	7	8.5
Safety Education	9	3	8	9	9	8.5	9	7

* "Interpretative Material" is excluded from this ranking.

The preceding discussion has dealt with the relative emphasis placed by source divisions upon the different problems. It is also instructive to inquire with regard to any particular problem, in what sources it was discussed, and what proportion of the discussion concerning it occurred in the various sources. Table X shows, for the ten large problem groups, what percentage of the total items recorded for each group occurred in each of the seven source divisions. Table X is computed from Table VII. Table X is to be read: The items recorded for racial hygiene were distributed, 1.7 per cent in Source Division I; 18.5 per cent in Division II; 33.5 per cent in Division III; 13.0 per cent in Division IV, etc.

TABLE IX

CORRELATION COEFFICIENTS COMPUTED FOR THE RELATIONSHIPS BETWEEN THE RANKING OF PROBLEMS IN CERTAIN SOURCE DIVISIONS

Source Divisions for Which *r* Was Computed	*r*	Source Divisions for Which *r* Was Computed	*r*	Source Divisions for Which *r* Was Computed	*r*
VI, Totals*	.9543	III, Totals*	.9269	Totals,* I	.4261
VI, I	.5378	III, I	.1882	Totals, II	.8893
VI, II	.7654	III, II	.9269	Totals, III	.9269
VI, III	.8799	III, IV	.9727	Totals, IV	.8893
VI, IV	.8325	III, V	.8421	Totals, V	.6775
VI, V	.5781	III, VI	.8799	Totals, VI	.9543
VI, VII	.1151	III, VII	.1882	Totals, VII	.2091

* Coefficients computed for the relationships between the ranking of problems according to the total number of items recorded and according to number of items recorded in the source division indicated.

TABLE X

PERCENTAGE OF TOTAL ITEMS RECORDED FOR EACH OF THE TEN PROBLEM DIVISIONS AS OCCURRING IN EACH OF THE SEVEN SOURCE DIVISIONS

	I	II	III	IV	V	VI	VII	Totals
Racial Hygiene	1.7	18.5	33.5	13.0	9.8	21.4	1.8	1.150
Personal Hygiene	1.0	5.0	4.4	5.9	.08	82.3	.2	2,425
Mental and Nervous Hygiene	2.4	7.0	13.7	12.7	.3	63.9	0	283
Degenerative Diseases	4	.5	4	4	0	71	16.5	200
Control of Infection	3.0	17.2	23.6	6.3	3.6	45.2	.7	2,659
Community Hygiene	.08	20	39.3	15.6	6.3	18.3	.17	2,235
Professional Health Service	0	11.3	9.2	35.9	8.7	24.9	10	281
Temperance Education	1.1	8.3	2.8	20.1	1.1	66.4	0	179
Safety Education	47.1	2.8	0	1.9	0	43.4	3.8	53
Interpretative Material	.3	14.3	25.6	26.5	1.6	24.9	6.7	621
Totals	1.9	13.9	22.1	11.5	3.8	45.1	1.5	10,086

Table I shows for each of the one hundred and sixteen problem groups the number of sources and of source divisions in which the problem was discussed.

The number of sources and source divisions in which a problem is discussed, and the proportion of the discussion occurring in each source division are points which deserve consideration when estimating the importance of a problem.

A problem which is discussed in many sources, especially if the sources are varied in kind, is quite likely to be one worthy of serious consideration. The writer does not assume, however, that a problem may be legitimately neglected simply because it is discussed in only one or a few sources.

Table X shows that the items recorded for Racial Hygiene are distributed with fair evenness among Divisions II to VII. Problems of Personal Hygiene, however, are concentrated in Division VI, where 82.3 per cent are found. Similarly, more than half (63.9 per cent) of the items recorded for mental hygiene occur in Division VI, with the majority of the remaining items distributed between Divisions III and IV. Since these divisions represent distinctly different types of sources, their distribution indicates a significant recognition of the importance of the problems in this group. Over 70 per cent of the discussion of degenerative diseases occurred in Division VI, the majority of the remaining items being in Division VII. The discussions of the Control of Infection and of Community Hygiene occur

chiefly in Divisions II to VI, but within those sources are rather well distributed, the greatest emphasis being given, for the former, by Division VI; and for the latter, by Division III.

Discussion of Professional Health Service is well distributed among Divisions II to VII. Two-thirds of the discussion of temperance problems occurs in Division VI, with 20 per cent in Division IV, and very slight attention in the remaining divisions.

Eighty-six per cent of the discussion of safety problems occurs in Divisions I and IV. The interpretative material is fairly scattered.

The chief value of these facts is in helping to describe the distribution of the items of the analysis, rather than in pointing to any very specific conclusions as to the validity of the problem groups. A study of Tables VII and X does lead to the conclusion, to be further verified in succeeding chapters, that all of these groups deal with health problems, which are shown to be important by evidence from many varied sources. Nine groups are discussed in at least six of the source divisions and five of them in all seven divisions.

All of the preceding discussion has dealt with the "total items" recorded. Reference to Table I shows that there are tabulated in five columns: Different Problems, Total Problems, Different Questions, and Total Questions and Total Items. It has been explained that record was made for each of the one hundred sixteen problem groups, of the number of different specific detailed problems belonging in that group, this being recorded in Table I in the column, Different Problems. The column headed Total Problems indicates the total number of times these detailed problems were mentioned. The column Different Questions indicates the number of different questions which were discussed in relation to that group of problems, the column Total Questions, the total number of times these questions were mentioned. The fifth column, Total Items, indicates the sum total of the Total Problems and Total Questions, and it is this last total which has been used in making all the calculations.

The purpose in differentiating "problems" and "questions" in this analysis was to see whether or not such a procedure would be of value, after a list of significant problems had been formulated, in ascertaining what kinds of subject matter should be

taught in relation to the various problems. A glance at the grand totals for Table I shows that there were 2,486 different problems discussed, and 2,458 different questions, less than one question to a problem. Although the questions doubtless have a general value in indicating what kinds of facts are essential in meeting these various problems, it is obvious that they are inadequate. This is a consequence of the nature of the sources selected, all of which, with the exception of the personal hygiene books, tend merely to present problems, rather than to deal with the scientific subject matter essential for their solution. This conclusion is confirmed by scanning the lists of questions tabulated in the original data. The questions are, in almost every instance, inadequate for a treatment of the problem.

Another question which arises is whether or not analysis of additional sources would have resulted in additional groups of problems. The sources analyzed were such that a very wide range of problems was actually covered. It would seem likely that a group of health problems if important, would be indicated by at least one of such sources as mortality reports, the publications of the Public Health Service, the annual reports of the Surgeon General, authoritative public health books, reports of municipal boards of health, personal hygiene books, or the reports of a life insurance company or the Life Extension Institute.

It has been explained that the sources were analyzed in the order indicated by their key numbers. Study of Appendix A shows that one hundred and seven of the one hundred and sixteen groups of problems had been recorded in the analysis of sources one to thirteen. The remaining nine groups of problems appeared in the analysis of sources fourteen to nineteen, and no new groups in the remaining sources. Expressed in a different way, one hundred and nine of the groups of problems appeared in the analysis of the first fifty-three per cent of items recorded, nine in the next forty-five per cent, and none in the remaining two per cent.[1]

These facts suggest, although they by no means prove, that most of the important groups of health problems are included in the list in this study. However, this applies only to the one hundred sixteen main groups of problems, and not to the details discussed in relation to each group.

[1] No new groups of problems were recorded in the sources which were discarded (reports of voluntary health organizations) which comprised 5.7 per cent of the original data.

At the conclusion of this statistical summary of results it seems worthwhile to point out the fact that all of the sources selected for analysis were broadly comprehensive, rather than narrowly selective. Source Division I includes the mortality statistics of the Bureau of the Census; Source Division II, a bibliography of all of the publications of the United States Public Health Service since 1881. The reports of the Surgeon General (III) represent the most authoritative attempt to describe annually the health conditions of the whole country. Both of the public health books in Division IV represent attempts to describe comprehensively the important health problems existing in the United States. The report of the Committee on Municipal Health Practice (V) summarizes the health problems and conditions which existed in eighty-three cities. It may be assumed that the writers of the books on personal hygiene (VI) considered the whole field of health problems in making their selection of subject matter for their books. The sources in Division VII deal with those problems which are the strategic points in the efforts to prolong life, as conceived by the Metropolitan Life Insurance Company and the Life Extension Institute.

There are, however, many complex factors entering into the preparation of all of these sources, which make the value of a refined statistical analysis doubtful. It will be observed that the only statistical comparisons which are made in this study are of a very general nature. In one instance, a comparison is made between the problems ranking highest, and those ranking lowest. (Tables II and III.) The only other conclusions which are drawn with respect to the relative importance of problems deal with the ten large major divisions of problems.

Table IX shows high correlations of the ranking given these ten divisions of problems, by the different source divisions, with two or three exceptions. The ranking of the problems in Source Division VII does not have a high correlation with the ranking in the other divisions. Considering the differences in the details presented by the different source divisions as shown in Appendix A, this agreement in emphases, given the large major divisions of problems, is surprising and lends weight to the assumption, that in general, the order of ranking may afford a rough basis for an estimate of the relative importance of the ten major divisions of problems in maintaining health.

Nevertheless, a caution is necessary against leaping to the conclusion that this order of ranking does literally and exactly indicate the relative amounts of attention to be given to these groups of problems in planning a course of study. It has already been pointed out that all of these groups of problems are important and in the writer's opinion deserve serious consideration, but that the amount of time to be given each one involves psychological and teaching problems not answered by this study.

The educational implications of the data relating to each group are discussed in more detail in Chapters III to XII.

SUMMARY

1. A list of one hundred sixteen groups of problems summarized by Table I resulted from the analysis made in this study. The one hundred sixteen groups fall into ten major divisions.

2. The nine divisions of problems (interpretative material excluded) rank as follows according to frequency of mention: control of infection, personal hygiene, community hygiene, racial hygiene, mental hygiene, use of professional health service, degenerative diseases, temperance education, safety education.

3. The ten problems ranking highest are as follows: nutrition, venereal diseases, administration, child health, tuberculosis, industrial hygiene, malaria, mental hygiene, big muscle activity, plague.

The ten problems ranking lowest are as follows: care of the voice, septic sore throat, Malta fever, other respiratory diseases,[1] appendicitis, diarrhoea, street cleaning, yaws, plumbing, foot and mouth disease.

4. Computation of correlation coefficients is not a satisfactory way of describing the similarity of emphases accorded the one hundred sixteen problem groups in the seven different source divisions, since there is no source division in which all of the problem groups are discussed. Ninety-five groups are discussed in Division VI, but only twenty-two in Division VII.

5. A study of those ten groups of problems out of the one hundred sixteen groups which rank highest in each of the types

[1] Tuberculosis, influenza, pneumonia, bronchitis, and most prevalent respiratory infections excluded.

or divisions of sources shows a great difference and variety of emphasis.

6. However, when the one hundred and sixteen problem groups are classified under ten headings, it becomes clear that there is a decided agreement, rather than disagreement, in the relative emphases given these large groups of problems. This is shown in Tables VII, VIII, and IX.

7. In spite of the varied emphases given by the eight source divisions to the one hundred and sixteen problem groups, a study of the distribution of the items recorded for each of the ten large classifications of problems in Tables VII and X shows that with one exception each of the ten groups is discussed in at least six of the source divisions, and five of the groups in all seven divisions. This leads to the conclusion that all of these ten divisions of problems deal with health problems which are shown to be important by evidence from many varied sources.

CHAPTER III

RACIAL HYGIENE

The discussion up to the present point has dealt only with large groups of problems, but in the following chapters there are presented the detailed lists of problems for each of the one hundred and sixteen groups. An attempt has been made to present enough details to represent faithfully the original data and to present a suggestive mass of materials for curriculum makers. At the same time a certain amount of condensation seemed necessary in order to avoid the confusion resulting when many problems are enumerated which differ from each other only in minute points.

The first group of problems to be considered is concerned with the conservation of racial health or, in other words, with the factors that affect the health of future generations rather directly. Problems of eugenics, of sex hygiene, and of prevention of venereal diseases have an obviously direct bearing upon the passing on of a healthful heritage from one generation to another. Problems of child health, particularly of infant welfare and maternity hygiene, are also considered in this group, since care of the child is essentially a racially forward-looking activity. Although this statement cannot be supported on the basis of biological heredity, it is true because of the working of what might be called "social heredity."

The proper care of children during their infancy and childhood years yields beneficial results during those years, but the immediate results in good health are not the only benefits. It is likely that a child who is properly cared for by his parents, whose childhood is lived in a healthful environment, who learns at school the value of health, will, through these experiences, receive a valuable education in healthful living. In turn, he will value health for his children, and will strive to care for them so as to give them every chance for vigorous health. Thus a manner of living conducive to good health may be passed on

by an educative process, from generation to generation, and the biological heritage may be given opportunity for the healthiest possible development. For this reason, it is true that child health activities are racially forward looking.

The problems relating to eugenics as they appeared in the sources studied, were as follows:

EUGENICS

To encourage eugenic marriages.
To encourage a higher birthrate among parents with favorable heredity.
To reduce the number of births among unfit parents, especially among the feebleminded.
To increase our body of scientific knowledge regarding human heredity; in particular to increase this knowledge to the extent that it can be practically applied.
To establish the means of carrying out a sound program of eugenics, first by education of the public and creation of sound public opinion, and second by legislation concerning marriage, especially marriage of the feebleminded, and of persons with communicable disease.

Although these problems were discussed only in the most general way, their importance was emphasized wherever they were mentioned.

They were discussed in "National Vitality, Public Health in the United States," in four of the six personal hygiene books, and in the material from the Life Extension Institute; making a total of seven different sources, divided among three of the groups of sources.

Health problems related to the control of the sexual aspects of life which were discussed were as follows:

SEX HYGIENE

To understand the significance of sex in life.
To form habits of rational control of the sexual aspects of life.
To create an attitude in young people of valuing in the opposite sex other things as well as the sexual.
To encourage high ideals of chastity; and of restricting sex intercourse to marriage relationships.
To overcome the conception of sex as shameful.
To abolish the double standard of morality.
To spread the knowledge of the dangers of illicit intercourse.
To destroy the superstition that continence is harmful to health.
To prevent sex perversions.
To abolish prostitution.
To encourage individual morality and self-control.

To establish standards which prevent indulgence in excessive intimacy between the youth of opposite sexes (especially with regard to dancing and "petting").

To follow the regimen of living, especially in childhood and adolescence, which favors a healthy growth of the organs of reproduction e.g., with regard to circumcision of the male infant, exercise, avoidance of infection, etc.

To follow a hygienic regimen during the menstrual period, especially with regard to exercise, bathing, and rest.

To control relationships healthfully during an engagement.

To help young people to a better understanding of the meaning of marriage, and of the ideals of love which make marriage successful.

To avoid marked incompatibilities in marriage.

To secure broad general common interests.

To manage the sex problems of married life healthfully.

Among the indirect means of promoting sexual health, the following problems were mentioned:

To form personal habits which promote sexual health, such as, those engaging in healthful work; use of hard bed, light coverings, sleeping alone; reading good books; seeing good plays, etc., abstaining from alcohol, avoiding irritating clothing; engaging in healthful recreation.

To improve housing conditions.

To improve hygienic conditions of industrial establishments.

To provide protective and recreational measures for young people.

Considerable discussion was given to the necessity for making sex education adequate, including the following problems:

To begin sex education early in life.

To carry on sex education in elementary schools, high schools, colleges, industrial plants.

To receive coöperation in religious leaders, parents, teachers, public libraries, women's clubs.

To ascertain the principles of sex education.

To ascertain what the content of sex education should be.

The problems in this group are discussed almost entirely from the adult's point of view. However, it is recognized by many students of problems of sex hygiene and sex education that the ability to live a healthy life in relation to sex depends to a great extent upon the early childhood experiences in learning the facts and meaning of sex, and upon the attitudes and ideals formed early in life.

It must be noted, nevertheless, that many people seriously question whether the elementary schools should make sex edu-

cation a subject for formal class instruction, or whether this task should be left to parents, or other responsible adults who may give individual instruction to the children. This question applies only to sex education in the narrower sense, as it refers to knowledge of sex and reproductive functions, and not to those broader problems of social relationships, such as the development of fine ideals of comradeship between boys and girls, which are included by some persons in the term "sex education."

The importance of sex education was recognized in particular by the United States Public Health Service, in its after-the-war campaign against venereal diseases. The campaign activities were divided into legislative, medical and educational; very great stress being placed upon the last.

In five of the six personal hygiene books, problems of sex hygiene were discussed, as well as in the Life Extension Institute Bulletins and Fisher's report, *National Vitality*.

Venereal Diseases

The following problems were discussed in connection with the prevention of venereal diseases:

To prevent the spread of venereal diseases; syphilis, gonorrhea, and chancroid, in particular.
To protect infants and children from venereal diseases by (1) establishing a program of prenatal care and treatment of mothers infected with syphilis; (2) prevention of gonorrheal ophthalmia.
To control personal or individual problems in avoiding syphilis:
To avoid sexual intercourse with infected persons (1) in married life; (2) outside of marriage.
To avoid contact with infected articles.
To avoid kissing infected persons.
To avoid transmission from infected parents to children in utero, or after birth, by contact.
To use only clean toilet articles.
To control personal or individual problems in avoiding gonorrhea:
To avoid sexual intercourse with infected persons.
To prevent infection of infants at birth.
To avoid use of common towels.
To establish educational and moral means for preventing spread of venereal diseases:
(See Sex Hygiene.)
To carry on educational activities for prevention of venereal disease, using all possible agencies, e.g., literature, exhibits, slides, films, pictures, coöperation of nurses and physicians, clinics, clubs, schools, churches, etc.

To obtain support of public opinion for legal measures controlling vice.
To educate industrial employers in venereal disease prevention.
To educate colored population in venereal disease prevention.
To establish economic and sociological means for preventing the spread of venereal diseases:
To remove causes of prostitution, e.g., monotony of industry and low wages; repression of social impulses by parents; lack of wholesome recreation; feeblemindedness; inferiority complex leading to desire to attract attention; late marriages (generally due to economic conditions).
To reduce use of alcohol.
To improve housing conditions.
To improve industrial hygiene.
To establish administrative and legal means for preventing the spread of venereal disease:
To maintain departments of venereal disease—municipal, state and federal, and to secure the coöperation of all departments and agencies working to prevent venereal diseases.
To exclude aliens with venereal disease.
To secure adequate reporting of venereal diseases.
To make spread of venereal infection unlawful.
To discover and control sources of venereal infection.
To enact and enforce necessary legal measures for control of venereal disease.
To obtain support of public opinion for these legal measures.
To establish medical means for preventing the spread of venereal diseases:
To diagnose, treat and cure syphilis and gonorrhea.
To carry out the provisions of the Chamberlain-Kahn Act.
To establish and maintain venereal disease clinics, for diagnosis and treatment.
To provide laboratory service.
To provide nursing service.
To isolate infected persons who refuse treatment.
To control carriers, especially among food handlers.
To suppress quack treatment for venereal disease.
To secure coöperation of druggists in control of patent medicines.
To control the production and distribution of arsphenamine, and to standardize methods of treatment with arsphenamine.
To carry on research in prevention of venereal disease, in fields of chemotherapy, methods of making diagnosis, other medical procedures in the collection of statistical data, etc.

Problems of preventing the spread of venereal diseases were discussed seriously in all of the groups of sources except the materials from the Life Extension Institute and the Insurance Companies. Statistics support this serious attitude. Although

the death rate from reported cases of syphilis is rather low, only 9.1 per 100,000, the Bureau of the Census estimates that the rate from syphilis and deaths listed under other causes, but in reality due to syphilis, is approximately 112 per 100,000. This is a higher death rate than for tuberculosis, pneumonia, or any other communicable disease. The annual report of the Surgeon-General for 1923 shows that approximately 120,000 new patients were admitted in that year to the venereal disease clinics established after the war.

Most of the discussion was carried on from the point of view of organizing the machinery for preventing the spread of these diseases; that is, of enacting the necessary legislation, of organizing the medical profession in its campaign against venereal diseases, of promoting research, of methods of educating the public at large and securing publicity. However, in some instances, particularly in the personal hygiene books, personal or individual problems were discussed. A study of the discussion of problems of organization reveals the relationship of the individual's responsibilities to the success of the administrative program. For example, it is difficult to control the advertising of quack medicines for the cure of venereal diseases. Laws have been passed for that purpose, and druggists are in some instances required to report the sale of any drug to be used for venereal diseases. This problem would be less serious were the people of this country less addicted to the use of patent medicines, and more in the habit of depending upon expert professional service. This brings us again to the necessity for educating individuals.

A consideration of any group of problems listed in this section impresses the reader with the complexity of the situation. The most careful study is necessary to ascertain what is the function of teaching in the schools in relation to the solution of these problems.

That education is the keystone in the work of preventing these diseases is often stated by public health authorities. In the Annual Report for 1922, the Surgeon-General says, "The need now is not so much for more laws as it is for the enforcement of existing legislation. A demand for the enforcement of these laws depends largely upon an enlightened public opinion, and this must be created through education."

In the writer's opinion the educational program in the schools will contribute most by such activities as are summarized in the quotation from *Health Education,* cited on page 48, rather than by study of venereal diseases as such.

CHILD HEALTH AND MATERNITY HYGIENE

The protection of the health of the child involves phases of nearly all of the existing public health activities. Most of the major problems of personal health, such as those of nutrition and big muscle activity, concern the individual throughout life, though adjustments must be made in accordance with age. A complete list of the problems of child health would therefore include nearly all health problems in some aspect or other. In this section, a summary is given which indicates (1) the importance of caring for children's health, (2) in brief, the chief causes of infant and child mortality and morbidity, (3) the problems that are peculiarly concerned with infant and child welfare (such as, improvement of birth registration) and (4) the large divisions in child health programs, as discussed in the sources of this study.

All the groups of sources analyzed emphasized the importance of caring for children's health, and these problems were discussed in seventeen different sources.

The mortality statistics reported by the Bureau of the Census give one kind of evidence of the seriousness of problems of infant and child health. They show, for example, what a large proportion of the total annual deaths in this country occur among infants and children. It was the realization of this fact which has been partly responsible for the increased interest in child welfare.

	Percentage of Total Deaths	
	1900	1920
Deaths occurring in children under 1 year.....	20.7%	15.3%
Deaths occurring in children under 5 years	30.4%	21.7%

The statistics also show the favorable effects of better care which children now receive. The problems discussed were as follows:

To reduce mortality (stated according to age).
(1) Among infants.
(2) Among infants under one month.
(3) Among older children.

To reduce mortality (according to cause as listed in mortality statistics) from

(1) Diseases of early infancy; premature birth; convulsions; congenital malformations; congenital debility; intestinal or stomach disorders; acute respiratory diseases.

To investigate the causes of still births.

(2) "Children's Diseases."

(3) Other infectious diseases; pneumonia, tuberculosis, bronchitis, malaria, influenza, diarrhoea, venereal diseases.

To correct (or prevent) defects, e.g., thyroid, tonsils, teeth, eyes, ears, nervous system.

To remove the fundamental causes of high rates of infant mortality, e.g., (1) improper feeding, (*a*) impure milk; (2) lack of prenatal care; (3) poor grade obstetrical work; (4) gainful employment of mothers; (5) poor housing; (6) lack of cleanliness; (7) alcoholism; (8) syphilis

To establish organized means of promoting child health:

1. To organize and administer child health activities.

To carry on child health surveys, gathering statistics and epidemiological data, and other facts about the child health situation.

To carry on child health demonstrations.

To devise standards and methods for the administration of child health activities.

To secure coöperation of women's clubs, parent-teacher associations, in child health work.

To secure personnel for child health work.

To administer maternity and infancy laws.

To administer federal, state, and local departments of child welfare.

2. To improve conditions surrounding the birth of the child.

To carry on and improve maternity and prenatal care and education.

To secure improved obstetrical care.

To secure licensing of midwifes and to improve midwifery services.

To provide for distribution and administration of silver nitrate for prevention of ophthalmia neonatorum.

To improve birth registration.

To reduce maternal mortality.

To prevent deaths from puerperal septicemia.

To prevent deaths from other causes than puerperal septicemia.

To establish the means for improving health for mothers, such as (*a*) improving obstetrical and pediatric service, especially in rural districts, (*b*) making provisions for improved prenatal care; (*c*) discovering and treating syphilis in pregnant women; (*d*) increasing public-health nursing activity.

3. To protect the health of the pre-school child.

4. To provide expert service for child health activities, e.g., physicians, nurses, clinic and hospital, laboratory service; health centers, etc, which will function in correcting defects, such as dental, eye and ear, etc., preventing disease, educational activity, etc.

5. To provide for vaccination of children.
6. To provide for healthful environment in relation to child health.
7. To manage children's daily regimen healthfully (see nutrition, big muscle activity, etc.).
8. To establish adequate standards for the physical development and normal growth of children.
9. To carry on education with reference to child health.
   To arouse public interest in child health and to increase national appreciation of the value of child health.
   To conduct conferences regarding child health.
   To encourage universities in giving courses in child health.
   To educate mothers in care of children, e.g., (1) prenatal care; (2) confinement and infant care.
   To educate young girls in care of children.
   To encourage the spread of health instruction by visiting nurses.
10. To maintain an adequate health program in the schools.
    To maintain a bureau of school hygiene (Federal).
    To give health examinations, and to discover and correct defects.
    To carry on daily inspection.
    To investigate causes of absenteeism.
    To control communicable diseases in schools.
    To provide for hygiene of instruction.
    To maintain the sanitation of the school plant, especially privies.
    To provide fresh air schools.
    To provide satisfactory school lunches.
    To provide an adequate program of physical education.
    To maintain clinics.
    To provide special classes for handicapped children.
    To provide dental service.
    To finance school health work.
    To organize and administer health work in school.
    To secure adequate personnel.
    To train teachers for school health work.
    To prepare standards for testing health knowledge.
    To provide play centers.
11. To regulate child labor healthfully.
    To investigate the effects of industrial employment upon the health of children.
    To secure widespread conformity to the standards set up by the Children's Bureau of the Department of Labor.
    To secure a thorough physical examination of every child entering industry.
    To secure periodic health examinations of all children in industry.
    To train physicians to be able to judge of the child's ability to stand well the work he enters.
    To secure correction of defects among children to whom working papers are refused.

To safeguard health of children in industry through issuance of working papers.

To secure adequate birth registration so that the real age of children applying for working papers may be ascertained.

12. To provide for health supervision of mothers and children in institutions.

To prevent illegitimacy.

The problems listed under child health are almost without exception problems for which adults must be responsible. What then, are the implications of these problems for a teaching program in the schools? Two suggestions occur to the writer as possible examples.

For one thing, a study of the provisions which society should make for child health might be part of the subject matter of courses in either the social science or in health education. Second, a certain amount of study of the characteristics and care of children might possibly be included in the course of study for high schools.

One result which might be hoped for from the first study would be an appreciation of professional expert health service, and of organized public health activities, followed by a willingness to support such activities.

SUMMARY

A total of fifty-one items was recorded for eugenics, and the discussion was scattered in seven sources, which were divided among three source divisions.

Problems of sex hygiene were discussed in eleven different sources, divided among four divisions. One hundred and eighteen items were recorded.

Five hundred and sixty-four items were recorded for venereal diseases and the discussion was divided among sixteen sources, scattered in six divisions of sources.

Four hundred and seventeen items were recorded for child health problems and maternity hygiene, occurring in eighteen sources divided among seven divisions.

DISCUSSION

It seems to the writer that these problems, when considered in a group, have very significant implications for education; that

they indicate the need for what may be termed, "education for parenthood."

"Education for citizenship and parenthood means that these human relationships (between boys and girls and men and women) must be rightly seen and rightly understood, and that through a correct understanding of them, boys and girls must be fitted to be constructively intelligent parents of desirable children in desirable homes."[1]

It is easier, however, to say that the need exists than it is to specify just how the schools can meet this need. No other group of problems in the field of health education is so complicated by unsolved psychological and sociological difficulties. The following quotation[2] indicates what some authorities believe that education for parenthood should include:

Education for parenthood is a continuous process, which, whether we like it or not, begins in babyhood and never ceases. It lies within our power to determine what sort of education it is. It is a broad comprehensive process, to which many experiences contribute: intellectual, social, emotional. On the intellectual side, both for men and women, it should embrace a knowledge of fundamental life processes, of the important characteristics and needs of children, of the economic and social problems of family life, and of the social significance of the family in contemporary life and for the future of the race. It should include the formation of such social and emotional habits and attitudes as will insure the practical application of the highest ideals.

[1] *Health Education.* Report of the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, National Education Association, Washington, D. C., 1924, p. 58.
[2] *Ibid.*, p. 60.

CHAPTER IV

PERSONAL HYGIENE

In this chapter we are dealing primarily with individual problems of personal hygiene, the responsibility for which lies with the individual rather than the community. The majority of the problems listed concern nearly all people in one way or another. Although the details may vary with individuals according to environment, age, occupation, and so on, these are essentially universal problems, since they arise from the biological nature and needs of human beings. Their importance does not need to be argued since it is obvious that life depends upon successful adjustment in these situations. Many of them are the commonplace everyday experiences of all people. In a later section it will be shown that the healthful adjustment of these everyday matters is also an important factor in reducing the incidence, or at least postponing the occurrence, of what are known as "the degenerative diseases."

The tendency again in this group has been to state the problems in terms of adult life, rather than child life. However, in most cases, it is possible to see what the application to child life would be. Consider, for example, the problem, "to select food containing the proper mineral salts for the diet." The young child normally has no responsibility in selecting food. His problem is to eat what is set before him. It is for adults to give him the right food—and for the child to learn to like it. However, he can begin to understand at an early age that spinach, for example, is a good food and one which is to be expected frequently at meals. Later on he will learn that spinach is valuable for the mineral contents.

Reference to Appendix A page 146 will show the number of sources, and groups of sources in which these problems were discussed. It is interesting to note, however, that of the total number of items dealing with personal hygiene, approximately 82 per cent appeared in the group of books on personal hygiene,

leaving less than 18 per cent of the items to be drawn from other sources.

NUTRITION

To control the hygiene of nutrition:

I. To select a healthful diet.

1. To include foods of sufficient bulk in the diet.
2. To include hard foods in the diet.
3. To eat the right amount of food, obtaining the right number of calories daily, according to activity, sex, age, weight, climate, and other individual needs.
4. To select a balanced diet.
   - *a.* To make the right selection of carbohydrates.
     To avoid candy and sweets in excess, especially between meals.
   - *b.* To select food containing the proper mineral salts for the diet.
     To secure adequate calcium salts.
     To increase American foods rich in calcium.
     To secure adequate phosphorus in the diet.
     To secure adequate iron in the diet.
     To secure adequate sodium, potassium, and magnesium.
     To secure adequate iodin.
     To avoid use of artificial compounds as sources of mineral salts.
   - *c.* To make the most healthful selection of proteins in the diet.
     To adjust the choice of protein foods according to age, whether for children or for adults.
     To include the most healthful amount of protein food in diet avoiding either an excess or a deficiency.
     To reduce the amount of protein in the American diet.
     To make the most healthful use of meat in the diet.
     To avoid protein with harmful purin content if subject to gout or Bright's disease.
   - *d.* To select the right kinds and amount of fats.
   - *e.* To select foods with most healthful vitamin content.
     To prepare food so that vitamins are not destroyed.
5. To make proper use of milk in the diet.
   To investigate the value of reconstructed milk.
6. To make proper use of water in the diet.
   To choose the best drinks, such as water, fruit juices, etc.
   To drink in a healthful way.
   To drink slowly.
   To avoid the misuse of ice water.
   To drink the healthful amount of water, about 6 glasses daily.
   To make proper use of water at meals.
7. To avoid the misuse of tea, coffee, and other caffein drinks, cocoa, Coca Cola.
   To prepare tea and coffee in most healthful way.
8. To select food of easy digestibility.
9. To secure variety in the diet.

10. To adapt diet to individual needs; to (*a*) age; (*b*) individual idiosyncrasies; (*c*) special diets for alleviation of some abnormal conditions.
11. To select a balanced diet at low cost.
12. To avoid fads in the diet and judge their value: hot water fad, raw food fad, no breakfast fad, sour milk fad, vegetarianism.

To make up special diets for alleviation of some abnormal conditions.

II. To prevent defects of nutrition.

1. To prevent diseases of organs of digestion, e.g., ulcer of stomach, liver diseases.

To prevent the several kinds of indigestion, e.g., nervous dyspepsia, auto intoxication (intestinal toxemia).

To prevent gout.

2. To maintain weight at its optimum point.

To prevent or correct malnutrition.

To educate the public in causes, results and remedies of malnutrition.

To prevent or correct obesity.

To establish standards of healthful weight.

3. To prevent the deficiency diseases, i.e., beri-beri, pellagra, rickets and scurvy.
4. To prevent food poisoning.

To prevent contamination of food by pathogenic micro-organisms.

To prevent botulism.

To develop methods for standardizing and testing botulism antitoxins.

To discover methods of canning and cooking food that destroy the spores and organisms of Bacillus botulinus.

To differentiate botulism from other kinds of food poisoning.

To investigate the etiology of botulism.

To prevent the spread of intestinal parasites.

To prevent the spread of trichiniasis, (1) by inspection of pork; (2) by thorough cooking.

To prevent the spread of intestinal tape worm, (1) by meat inspection; (2) by thorough cooking.

To prevent the entry of clonorchiasis into the United States.

To provide laboratory service for the detection of intestinal parasites.

To prevent spread of infection through milk.

To prevent ptomaine poisoning (of rare occurrence).

To prevent bacterial contamination of shellfish beds.

To secure adequate reporting of food poisoning.

To prevent poisoning from vegetables, fruits, meat, or fish.

To prevent adulteration of foods.

To prevent food poisoning due to chemicals.

To avoid food poisoning from anaphylaxis (allergy).

To investigate causes of food poisoning.

III. To select the most healthful diet for infants.
- To investigate the value of dried milk powder as a food for infants.
- To encourage breast feeding rather than bottle feeding.
- To overcome the vitamin deficiencies of pasteurized milk in the infant's diet.
- To prepare the most healthful milk formula for infants (bottle food).
- To adjust the diet to infant's age.
- To make adjustments in the diet for sickness.

IV. To carry on an educational program for improvement of nutrition, e.g., through nutrition classes.
- To educate the public in food selection.
- To increase research in control of nutritional diseases.
- To isolate the antineuritic vitamin from yeast.
- To establish satisfactory standards of nutrition.

V. To eat food in the most healthful manner.
- To control the environment, especially with reference to cleanliness and quiet.
- To control the condition of the individual while eating, especially with reference to emotional control, rest and fatigue, posture.
- To control habits of eating, especially to eat slowly and to masticate thoroughly.
- To avoid overeating.
- To eat the most healthful number of meals daily.
- To eat the heaviest meal at most healthful time of day.
- To eat regularly.

VI. To prepare food in the most healthful way.

Big Muscle Activity

- To secure the proper kinds and amounts of big muscle activity.
- To secure adequate big muscle activity in conditions of modern sedentary civilization, under pressure of lack of space, time, and equipment.
- To adapt exercise to occupation; i.e., amount and kind of activity entailed in occupation determines kind and amount of exercise needed in addition.
- To secure outdoor exercise.
- To adapt exercise to climate.
- To adapt exercise to sex.
- To adapt exercise to the individual, e.g., the cardiac or other defect.
- To avoid excessive exercise for weak or adolescent children.
- To adapt exercise to age differences.
- To avoid undue restraint of children's activities.
- To educate adults to take enough exercise.
- To maintain correct posture.
- To correct poor posture, by sports, singing, dress, special exercises, orthopedic services.
- To maintain correct sitting posture.
- To select chairs which aid correct sitting.

To recline correctly.
To stand correctly.
To walk correctly.
To prevent and correct common skeletal deformities, e.g., curvature of spine by poor posture, diseases and deformities of the bones and organs of locomotion, round shoulders, humpback, knockknees and bowlegs, backaches.
To avoid the causes of crippling defects, e.g., rickets, tuberculosis, infantile paralysis, accidents, diseases of infancy, and poor posture.
To prevent visceroptosis.
To maintain school athletics on a healthful level.
To center attention on securing physical education for all students, rather than for winning teams.
To secure adequate attention to athletics in colleges.
To inject the educational point of view into school athletics.

Feet

To care for the feet.
To prevent foot defects, e.g., weak foot and flat foot.
To educate people with reference to (1) good shoes, and (2) correct walking.
To correct foot defects.
To use corrective exercises.
To secure specialist's services.
To select correct shoes for correction of the defect.
To walk correctly.
To reduce weight (if overweight is cause of foot defect).
To select an occupation that does not augment or cause foot defects.

Recreation

To secure for everyone opportunity for healthful recreation.
To use leisure time healthfully.
To adapt recreation to individual needs.
To select the most healthful types of recreation (life promoting).
To overcome the depressing effects of the modern industrial system on the spiritual and creative life of workers; in part by providing adequate recreational life in all communities.

Swimming Pool

To maintain public baths in cities.
To maintain the sanitary conditions of swimming pools, public baths, and bathing beaches.
To sterilize water in swimming pools effectively.
To provide for individual cleanliness of persons who enter swimming pools.

Circulatory System

To maintain the health of the circulatory system.
To maintain the health of the heart.
To prevent diseases of the heart; organic diseases, acute endocarditis angina pectoris, etc.

To prevent cardiac disorders in childhood, in middle life, and in late life.

To carry on research with reference to heart disease, its cause, prevention, and cure.

To detect cardiac disease in its incipiency.

To avoid the causes of heart disease:

a. Infections, especially from rheumatism, tonsil, tooth or other local infection; syphilis, scarlet fever and pneumonia.

b. Intoxications and poisons, from alcohol, drugs, such as, aspirin; excessive use of tobacco, tea, coffee.

c. Non-hygienic habits or conditions of living, such as, indolence and sedentary life; obesity, lack of fresh air, improper diet, loss of sleep, excessive excitement.

d. Diseases of the arteries.

e. Diseases of the kidneys.

f. Nervousness.

g. Goiter.

h. Congenital defects.

To provide for thorough convalescence after infectious diseases.

To have periodic health examinations, both for children and adults.

To care for cardiac cases:

To provide for early diagnosis and treatment, and removal of foci of infection if necessary.

To provide adequate institutional facilities, clinics, hospitals and sanatoria.

To provide vocational guidance for cardiacs.

To provide adequate professional care, medical supervision, supervised exercise, etc.

To secure the coöperation of public and private agencies which can assist in prevention of heart disease.

To prevent other defects of circulation, e.g., a sluggish circulation with cold feet and hands; diseases of the arteries; embolism and thrombosis; cerebral hemorrhage; varicose veins, and leukemia.

To keep the blood in good condition by (1) prevention of hemorrhage; (2) prevention of diseases—malaria, chronic dysentery, intestinal parasites, kidney and liver disorders; (3) use of correct iron-containing foods; (4) prevention of chronic suppuration; (5) avoiding poisons.

To choose the most effective methods for the cure of anemia, e.g., use of food rich in iron rather than medicinal iron.

Hygiene of Respiration

To maintain a healthy respiratory system:

To live outdoors as much as possible.

To keep the ventilation within doors healthful.

To make healthful use of sunlight.

To form hygienic personal habits with regard to nose-breathing.

To use cold baths (for improvement of resistance to colds).

To keep the body warm.

To correct defects of nose and throat.
To avoid infections.
To sleep with open windows or outdoors.

Sleep and Rest

To secure adequate sleep.
To choose the most hygienic methods of sleeping, by (1) using hard beds rather than soft, (2) avoiding unhygienic use of pillows, (3) sleeping outdoors, (4) providing adequate protection from cold when sleeping, and (5) using light covers.
To avoid intense mental activity before retiring.
To form regular habits of sleeping.
To prevent and correct insomnia.
To secure adequate rest.
To plan for a balance between rest and activity.

Work

To maintain hygiene of work, selecting, if possible, work that is pleasant, profitable, and purposeful.
To secure balance of rest and activity.
To avoid excessive physical or mental strain in work.
To secure healthful surroundings for work.
To observe moderation in work and play.

Fatigue

To prevent undue fatigue.
To regulate the working day to avoid fatigue, with respect to length of day and rest periods.
To select diet most likely not to increase fatigue.

Elimination of Waste Products

To secure regular evacuation of waste (from bowels).
To secure regular elimination of waste by urination.
To prevent constipation, both in children and adults, by controling the causes of constipation, such as anxiety, nervous excitement, improper or irregular diet, muscular inactivity, habitual neglect, displacement of viscera, unhygienic clothing, undue haste at meals and at toilet, failure to drink enough water.
To correct constipation.
To avoid the abuse of cathartics.

Kidney Diseases

To prevent acute nephritis, and other kidney disorders.
To correct kidney disorders.
To secure correct elimination from kidneys by regulating diet.
To prevent diseases of other organs of elimination, e.g., gall bladder.

Skin

To care for the skin.

To care for the complexion, e.g., (1) to use soap in the most hygienic way, (2) to adjust temperature of water in washing face, (3) to judge intelligently of complexion aids.

To prevent and correct disturbances of the skin, such as, pimples or acne, sunburn, freckles, tanning, eczema, dandruff, and warts.

To prevent the spread of skin diseases and infections, such as, ring worm, erysipelas, abscesses, boils, etc.

To prevent spread of skin diseases through barber shops.

To keep skin clean (see Bathing).

To control health of skin by selecting healthful diet, by (1) drinking necessary amount of water; (2) avoiding drugs that cause skin trouble; (3) avoiding constipation; and (4) avoiding anaphylactic foods.

To control perspiration.

To care for nails.

To prevent ingrowing nails.

BATHING

To bathe healthfully.

To keep clean by bathing.

To use the bath for other hygienic purposes: (1) warm bath for inducing sleep or to remove muscular soreness; (2) neutral bath, inducing sleep and rest; (3) hot bath; relief of pain or soreness, prevention of colds; (4) Turkish bath; (5) foot bath; (6) salt rub; (7) outdoor bathing and swimming; (8) cold bath for tonic effect.

To adapt method of bathing to extremes of age, for childhood and old age.

To keep hands, face and nails clean, especially before handling food.

CLOTHING

To clothe the body properly to choosing: (1) loose clothing; (2) porous clothing; (3) light clothing; (4) clothing that provides equable temperature; (5) clothing that provides for unrestrained body movement, especially in choosing garters, and in avoiding suspending heavy clothes from the waist; (6) good colors in clothing.

To adjust clothing to weather or climate.

To avoid under-dressing.

To keep clothing clean.

To avoid excessively warm neckwear.

To clothe the extremities healthfully.

To vary clothing healthfully with age.

To select clothing for outdoor jobs.

To select clothing for indoor jobs.

To wear healthful night-clothing.

To avoid the use of waterproof materials.

To select healthful underclothing.

To select healthful shoes, with correct sole, inside line, heel and toe.

To select healthful hats—light, ventilated, loose.
To avoid veils.

Mouth Hygiene

To care for the mouth and teeth.
To prevent and correct tooth defects, such as (1) decay; (2) malformation; (3) pyorrhea.
To prevent septic infections of the mouth.
To make surveys of mouth hygiene conditions.
To conduct mouth hygiene demonstrations.
To carry on education in dental hygiene.
To train teachers in dental hygiene.
To establish dental clinics.
To remove the causes of tooth defects, e.g., (1) defective prenatal or postnatal nutrition, especially lack of adequate minerals; (2) lack of coarse food; (3) poor heredity; (4) bacterial infection; (5) irritation; (6) poor dental work; (7) constitutional diseases.
To use the necessary means for preserving the health of the teeth such as (1) providing for adequate nutrition, in prenatal as well as postnatal life; (2) using the dentist's professional services, for periodic semi-annual examination, correction of defects and irregularities; (3) giving the temporary teeth adequate care; (4) keeping the teeth clean by (*a*) use of adequate method of brushing the teeth, (*b*) use of a satisfactory dentifrice; (5) using some coarse food daily which requires vigorous use of the jaws in mastication; (6) avoiding infection, especially pyorrhea; (7) keeping unsuitable articles out of the mouth; (8) preventing thumb sucking; (9) building up good general health.

Nose and Throat

To keep the upper air passages—nose, throat and ears—healthy.
To prevent diseases of the pharynx.
To keep sinuses free from infection (see Local Infections).
To correct enlarged turbinates, defective adenoids, infected tonsils, polypi.
To improve the means for checking infection of nose and throat.
To check infection in the nose or throat by use of silver nitrate, or other similar solution.
To prevent and cure hay fever, (1) by diagnosing and avoiding the causal protein (involves use of expert services); (2) by giving vaccines (in some cases); (3) by improving the nervous tone.
To secure adequate professional aid.
To prevent asthma.
To diagnose and avoid any causal protein.
To correct abnormalities of the nose.
To cure asthma (value of use of immunizing serum).
To secure adequate professional services.

VOICE

To use the voice hygienically.

EAR

To prevent diseases of the ears and their annexa, including mastoiditis.
To prevent deafness.
To prevent and relieve earache.
To relieve head noises.
To relieve vertigo or dizziness.
To avoid the causes of ear disorder and disease, e.g., (1) catarrh; (2) infections of the ears; (3) infected adenoids and tonsils; (4) scarlet fever, measles, influenza, etc.; (5) hardened wax; (6) foreign bodies in the ear; (7) loud, shrill noises; (8) neurotic tendencies; (9) heredity; (10) failure to protect the ears when diving and swimming.
To secure adequate professional services for ear disturbances.

VISION

To care properly for the eyes.
To use adequate professional service in care of the eyes, e.g., to make regular periodic eye examinations customary for all people.
To secure and wear well-fitted glasses when needed.
To avoid patent medicines and quacks in caring for eye troubles.
To secure hygienic lighting conditions.
To form hygienic habits of using the eyes.
To rest eyes frequently.
To avoid an excess of fine work.
To maintain proper posture when reading.
To avoid dotted veils.
To wear colored glasses for protection against bright light.
To prevent blindness.
To prevent diseases of the eyes and their annexa, e.g., (1) ophthalmia neonatorum; (2) pink eye; (3) trachoma; (4) chalazions; (5) styes, etc.
To prevent eye strain.
To care for foreign bodies in the eye.
To care for black eye.
To care for eyes in case of accident.
To prevent systemic causes of eye trouble.
To correct defects of structure, e.g., (1) far sightedness; (2) short sightedness; (3) astigmatism; (4) "old sight," or presbyopia; (5) neurotic vision, and (6) squint.

HEADACHES

To prevent, remove, correct or alleviate the causes of headaches, such as (1) adenoids; (2) tonsilitis; (3) nose defects; (4) sinus infection; (5) ear defects; (6) tooth defects; (7) eye defects; (8) excessive use of eyes; (9) infections of eyes; (10) malaria; (11) meningitis; (12) syphilis; (13) rheumatism; (14) or other infectious diseases; (15) lice; (16) organic diseases, such as certain diseases of kidneys, or of circulating system, anemia; (17) brain tumors; (18) cerebral concus-

sion; (19) functional nervous disorders; (20) neuralgia; (21) epilepsy; (22) over excitement; (23) hunger; (24) indigestion and constipation; (25) fatigue; (26) exposure to heat or cold; (27) menses, or menopause; (28) pregnancy; (29) heredity.

To correct headaches by hygienic means, such as (1) use of sufficient drinking water; (2) use of enemas, cold compresses, baths, etc.; (3) use of rest and exercise and massage; (4) healthful diet; (5) avoiding constipation.

GLANDULAR DEFICIENCIES

To prevent or correct diseases of the endocrine glands.

To standardize pituitary extract.

GOITER

To promote goiter prevention.

To prevent exophthalmic goiter.

To prevent endemic (simple goiter or adolescent goiter).

To secure sufficient iodine in the diet to prevent goiter.

DIABETES

To prevent diabetes.

To avoid the causes of diabetes (so far as they are known), e.g., (1) obesity, sedentary habits; (2) disturbances of the nervous system; (3) exophthalmic goiter; (4) diseases of the liver; (5) heredity; (6) luxurious living.

To cure diabetes.

To standardize insulin.

To have a periodic health examination for purposes of early diagnosis.

HANDS

To care for the hands.

To wash hands before eating.

To wash hands after the toilet.

To keep the nails properly manicured.

To prevent or care for hang-nails.

To avoid (1) scratching with nails; (2) biting nails; (3) putting fingers in the mouth.

To keep hands clean in administering first aid.

HAIR

To care for the hair.

To shampoo the hair correctly.

To avoid useless or harmful hair tonics.

To massage the scalp daily by brushing.

To avoid injuring the hair by excessive waving as in a permanent wave.

To prevent baldness.

To prevent dandruff.

To remove superfluous hair.

To avoid infection at barber shops.

SUMMARY

The number of items recorded for each problem, the number of sources, and the number of divisions of sources in which the problems were discussed, are summarized in the following table:

	Total Items Recorded	Number of Sources	Number of Divisions
Nutrition and food and prevention of defects of nutrition	818	18	7
Big muscle activity and prevention of skeletal and muscular defects	233	11	4
Sleep	56	5	1
Work	19	2	1
Fatigue	23	2	2
Circulatory system and prevention of diseases of circulatory system	191	6	4
Excretion and elimination of waste and prevention of kidney diseases	160	10	5
Skin	91	7	3
Bathing	56	8	3
Clothing	100	7	2
Glands of internal secretion including prevention of goiter and diabetes	82	9	6
Mouth hygiene	147	12	3
Nose and throat	8	3	2
Voice	6	1	1
Ears	51	4	2
Adenoids	26	5	3
Tonsils	27	5	1
Asthma	19	4	3
Hay fever	36	5	3
Vision	103	8	4
Headache	86	2	2
Feet	38	7	2
Hands	13	3	1
Hair	38	5	1
Total	2,425		

DISCUSSION

The problems listed in this chapter are the familiar problems of personal hygiene. These are the problems which are most frequently included in courses of study and textbooks in hygiene. (See Table XIV.)

The group of problems relating to nutrition, as has been pointed out elsewhere, is discussed at greater length and in more detail than any other group of problems. The items listed are

arranged in six groups; the selection of diet; preparation of infant's diet; prevention of nutritional defects and diseases, and of diseases caused by food; problems of education and research in nutrition; control of manner and environment while eating; the preparation of food.

A scrutiny of the items listed under the heading "Circulatory System," shows that many items are included there which do not seem particularly suitable for inclusion in a course of study. The things which do seem to the writer significant for a health teaching program are indicated under the items "To avoid the causes of heart disease," especially infections, intoxications and poisons, and unhygienic habits or conditions of living. The periodic health examination and the allowance of time for thorough convalescence after infectious diseases, are also matters of importance in prevention of heart disease.

There are listed in this chapter the problems of preventing the degenerative diseases, including those of circulation, of nutrition, of the kidneys, and of the pancreas (diabetes). The prevention of these diseases, their importance as a health problem, and the possible implications for a health teaching program are discussed in Chapter VI.

There are also listed in this chapter problems of preventing and correcting many defects, such as malnutrition, postural defects, and defects of the specialized organs, such as eyes and ears.

The importance of caring for the special organs of the body becomes clear when the consequences of neglect are considered. That habits of neglect and ignorance of the principles of hygiene are widespread is proved by statistics showing the number of defects of teeth, eyes, ears, etc. Statistics showing the frequency with which some of these defects occur among school children are very familiar. Statistics are quoted on the following page from *Health Education*,[1] the report of the Joint Committee on Health Problems, of the National Education Association, and the American Medical Association. They are nearly identical with statistics in the sources analyzed in this study.

[1] *Health Education.* Report of the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, National Education Association, Washington, D. C., 1924, p. 17.

Defect	Per Cent of School Children Affected
Heart Disease	0.7
Decayed Teeth	50–98
Adenoids and Diseased Tonsils	30–40
Defects in Vision	25
Defects of Posture and Foot Arches	25–40
Malnutrition	15–25

Examinations of adults yield similar results. Records of examinations made by the Life Extension Institute [1] show that of five thousand people who, for the most part, did not consider themselves sick, none were entirely without defects; one-tenth of one per cent had minor defects; fifteen per cent had moderate defects requiring minor attention; twenty-five per cent had moderate defects requiring medical supervision; thirty-one per cent showed advanced physical impairment; and eight per cent had serious defects requiring immediate attention.

The harm resulting from neglect in caring for these specialized organs is rarely confined to the organ itself. The relationship of the condition of the teeth to good health, for example, is far more intricate than formerly was supposed. It is not enough that the teeth should be in good condition for mastication. It is now generally understood that abscessed or infected teeth act as foci of infection from which the bacteria or their toxins may spread to other parts of the body, damaging the heart or causing rheumatism, for example.

In the opinion of the writer, these facts which indicate the seriousness of these health problems suggest, not that school children should study about these defects, but that those who are planning health teaching programs should ascertain what are the important measures which would prevent these defects, and that whenever the preventive measures include the formation of certain personal habits or attitudes, or the mastery of certain knowledge by individuals, the habits, attitudes and knowledge should be taken into account in the teaching program.

[1] Moore, H. H. *Public Health in the United States.* Harper and Bros., 1923, p. 53.

CHAPTER V

MENTAL AND NERVOUS HYGIENE

The scientific approach to problems of mental health is a relatively new thing. This is one reason for the fact that although the importance of mental health is plainly apparent, the causes and effects, and the means of prevention of mental disorders are as yet somewhat vaguely formulated. However, a scrutiny of the problems which were discussed shows that at least some preventive value was assigned in the sources analyzed to certain habits of living. The problems discussed were as follows:

To carry on a positive constructive program of mental hygiene.
To educate the public with reference to mental hygiene.
To establish an adequate program of mental hygiene in schools, including giving of mental examinations.
To replace the idea that mental disease is inevitable, by the understanding that it is preventable.
To establish a mental hygiene program in industries.
To secure expert service for the care of mental disorder.
To establish mental hygiene clinics.
To carry on research in neuropsychiatrics, neurosurgery; study of causes and control of mental diseases; study of aptitudes and disabilities of students; to make surveys of mental health; to gather statistics of mental disorders and defects; to investigate the physical and mental condition of sexually delinquent women; the relation of mental disorder and crime, or juvenile delinquency, etc.
To prevent mental and nervous diseases; insanity, hysteria, neurasthenia, psychasthenia, general paralysis of the insane, locomotor ataxia, epilepsy.
To remove the causes of mental disease; such as syphilis, alcoholic intemperance, heredity; bad health of mother in pregnancy; school and home habits, such as brooding, sensitiveness, suspicion and lack of frankness, worry and strain associated with over fatigue; some infectious diseases.
To change the treatment of insanity so that it is scientific and humane.
To remove prejudice and misinformation regarding insanity.
To exclude immigrants with mental and nervous diseases.
To care for mentally disordered soldiers and to rehabilitate mentally the disabled ex-service men.

To reduce the number of suicides.
To improve heredity with relation to mental defects.
To live the hygienic life that will help to prevent mental disorders, e.g.
To cultivate healthful emotional habits: e.g., (1) meeting crises calmly; (2) avoiding worry, brooding, over-emphasis on pain, or over-emphasis on health (hypochondria); (3) forming habits of self control, with respect to the emotions; (4) cultivating healthful emotions, such as cheerfulness, serenity, courage.
To maintain equilibrium and harmony of action between the cerebrospinal and autonomic nervous systems.
To live a life of balanced work, play and rest: e.g., (1) avoiding hurry as a habit; (2) living quietly, simply and regularly, avoiding an excess of strenuous competition; (3) securing adequate rest and sleep; (4) forming the habit of "living one day at a time."
To cultivate wholesome moral qualities, such as unselfishness, decision, efficiency, ability to control or renounce desires, understanding of other people, open mindedness, giving religion its proper place in life; having faith in the goodness of life; forming ideals of seeking happiness rather than wealth.
To select the proper career, according to one's abilities.
To adjust one's activities to one's capacities.
To have confidence in one's self.
To select wholesome recreation.
To avoid drugs and alcohol.
To avoid infectious diseases (particularly those that affect the nervous system).
To control the sexual phases of life healthfully.

SUMMARY

A total of two hundred and eighty-three items was recorded for mental hygiene problems. The discussion was scattered in sixteen sources, divided among five divisions. Approximately 35 per cent of the discussion appeared in public health sources, and 65 per cent in the personal hygiene books.

DISCUSSION

Study of the problems listed under the heading Mental Hygiene suggests to the writer two important aspects which need emphasis in a health teaching program. It seems logical that attention should be given to the formation of those healthful habits and attitudes that will help to prevent mental disorders. The writer doubts that the formation of these mental and emotional habits would be accomplished as readily by having the pupils read and study about them as by arranging the school

program so that the environment and daily regimen favored the formation of the habits.

Some authorities in mental hygiene believe that it is important that the prevailing misconceptions of mental disorders should be corrected. For example, the idea that mental disease, or insanity, is always inherited and never curable, should be replaced by an understanding that many mental disorders, like other diseases, are both preventable and curable. There is need also to remove the fear or shame which prevents people from consulting the physician or psychiatrist, so that the person suffering from mental disorder shall call for expert professional attention as readily as any other invalid. The writer believes that it would be possible in a well-planned program of health education to remove these misconceptions.

CHAPTER VI

DEGENERATIVE DISEASES

The problems recorded under the heading, Degenerative Diseases, were only those general items which did not refer to a specific degenerative disease. There were eighty-nine items recorded, occurring in seven sources, divided among three divisions of sources. The items recorded included general discussion of the problem of preventing degenerative diseases and general discussion of the causes of these diseases. About 70 per cent of the items appeared in the personal hygiene books.

However, this general discussion does not represent the total amount of discussion of degenerative diseases. The degenerative diseases include certain diseases of the heart, arteries, kidneys (including Bright's Disease), liver and gall bladder, nervous system, locomotor apparatus, and endocrine glands (including diabetes mellitus). Discussion of the degenerative diseases, when specifically dealing with one of them, was recorded with the group of problems dealing with the particular part of the body affected; *e.g.*, diabetes mellitus, a disorder of the pancreas, was classified with the group of glandular disorders.

When the items dealing with specific degenerative diseases are considered, it is seen that the discussion was widely scattered, appearing in the census reports, publications of the United States Public Health Service, books on public health, personal hygiene books, and in the material from the Life Extension Institute and the Metropolitan Life Insurance Company.

DISCUSSION

In recent years it has become apparent that death rates from what are called the degenerative diseases are, if not increasing, at least remaining stationary. The degenerative diseases, as has been mentioned, include certain diseases of the heart, arteries, kidneys (including Bright's Disease), liver and gall bladder, nervous system, locomotor apparatus, and endocrine glands, in-

cluding diabetes mellitus. These diseases constitute a serious problem, not only because of the great numbers of people affected, but because they cut short the prime of life, reduce the working capacity of what should be the most productive years, and induce premature old age. Heart disease ranks first in the United States as a cause of death, while cerebral hemorrhage, nephritis, cancer, diseases of the arteries, and diabetes, persistently from year to year, rank in the first fifteen causes of death.

There are many obscure points in our present knowledge of the causation and prevention of these diseases, but it seems likely that it would be possible to prevent, or postpone, a considerable number of cases by the application of some of the well known principles of hygienic living, and by the prevention of some kinds of infectious diseases.

Infections which are sometimes followed by a degenerative condition are (1) local infections of teeth, tonsils, etc., (2) rheumatic fever, (3) syphilis and gonorrhea, (4) typhoid, (5) scarlet fever, (6) septicemia, (7) influenza, (8) measles, (9) smallpox, (10) diphtheria, (11) encephalitis, (12) poliomyelitis, (13) meningitis, and (15) pneumonia. Local infections, venereal diseases and rheumatic fever are involved in the largest number of cases.

The principles of hygienic living which need to be emphasized in prevention of degenerative diseases do not differ from those which have been previously enumerated. Those which are particularly important are briefly indicated in the following paragraphs:

1. Maintaining a healthful state of nutrition.
   a. Avoiding obesity.
   b. Avoiding purin rich foods.
   c. Use of sufficient water.
2. Taking regular, moderate outdoor exercise.
3. Taking regular, adequate rest and sleep.
4. Avoiding constipation.
5. Avoiding the use of alcohol, cocaine, heroin, or other narcotic drugs.
6. Avoiding the misuse of tobacco, coffee or tea.
7. Practicing self control, avoiding emotional excitement, forming habits of regularity and equanimity.

8. Formation of proper habits of balancing work and play; of taking suitable relaxation that is healthful and recreational; of taking adequate vacations.

Many authorities believe that one of the most important preventive factors would be the practice of having an annual health examination made by a competent physician, who would not only discover any incipient diseases but would give advice, regarding the regimen best adapted to the individual's needs.

Some of the degenerative diseases seem to exhibit hereditary tendencies; this is true of diabetes, of some of the degenerative diseases of the nervous system, and of gout. In families where such a history is found, the periodic health examination, and the consequent advice of the specialist give, according to some authorities, the greatest promise of preventing or postponing the development of the disease.

The facts, then, are that the degenerative diseases constitute a serious health problem, and that so far as is known the prevention or postponement of these diseases would be furthered by prevention of certain kinds of infection, observance of certain of the rules of personal hygiene, and the practice of having a periodic health examination.

The interpretation which the writer gives to these facts is that they serve to emphasize the need for education with regard to the personal hygiene rules concerned, with regard to the control of infection so far as the individual is responsible, and with regard to the value of the periodic health examination.

CANCER

To prevent cancer.

To cure cancer (methods: surgery or X-ray).

To educate people to have periodic health examinations in prevention of cancer.

To educate people concerning symptoms and prevention of cancer, e. g.,

1. To seek expert advice at earliest discovery of any signs of cancer.
2. To avoid local irritations, especially of skin and mouth, as irritation from tobacco chewing, pipe smoking, very hot foods, or irritation of moles or warts.
3. To avoid chronic ulcers.
4. To have suspicious lumps in any part of the body, but particularly in the breast, examined and removed if advisable. (Value of periodic health examination).
5. To improve obstetrics; to correct piles or hemorrhoids; to remove infected appendix, etc.

To carry on research in control of cancer.
To prevent or remove non-cancerous tumors, when so advised.

DISCUSSION

Strictly speaking, cancer is not one of the degenerative diseases. It is, however, with rare exceptions a disease of middle and old age, and in this respect resembles the degenerative diseases.

The present confusion of opinion and uncertainty of knowledge with regard to cancer make it impossible to carry on an extensive preventive campaign of education. Some authorities state that the most important means of prevention that can now be recognized as useful is the periodic health examination, which should discover suspicious signs of cancer early enough for successful removal. Information of importance for adults is simple, and centers around the following facts (1) the earlier the cancer is discovered, the greater are the chances for its successful removal, (2) the only known reliable means of cure are operations, and in some cases X-ray and radium, and (3) local irritations of the skin and mucous membranes sometimes cause cancer and should always be avoided.

Cancer, since it persistently ranks among the first ten causes of death, is one of the serious health problems. Scientific knowledge upon which to base our methods of control is not yet adequate to solve the problem satisfactorily.

SUMMARY

About seventy per cent of the discussion of cancer appeared in personal hygiene texts, and the rest in census reports and publications of the United States Public Health Service, and public health books. One hundred and eleven items were recorded, in twelve sources, scattered in six divisions.

CHAPTER VII

CONTROL OF INFECTIOUS DISEASES

The problems of prevention of communicable diseases are here classified, for convenience, in seven groups: (1) diseases spread by the discharges of the respiratory tract; (2) diseases spread mainly by contamination from human excreta; (3) diseases disseminated only through the agency of insects; (4) focal infections; (5) diseases spread mainly by quite direct contact with infected persons; (6) diseases caused by infections of wounds; and (7) a miscellaneous group. The basis for classification in five of the groups is the means by which the infection is spread, upon which, of course, depends the program selected for controlling the disease. Since it is the preventive activities, rather than the characteristics of the diseases themselves, with which the educational program is concerned, this classification provides for a convenient grouping of essential informational material.

Diseases Spread By Discharges From The Respiratory Tract

Tuberculosis

To prevent tuberculosis:

1. To maintain adequate public health organizations for the prevention of tuberculosis.
   - To secure the coöperation of all agencies concerned with prevention of tuberculosis.
   - To finance organized activities for the prevention of tuberculosis.
2. To enact and enforce needed legislation.
   - To secure adequate detecting and reporting of cases.
   - To exclude tuberculous immigrants.
3. To improve the economic status of the poorer classes.
4. To provide healthful conditions, especially to relieve over-crowding.
5. To improve hygenic conditions in industry, especially with regard to dusts, poisons and fatigue.
6. To carry on all child health activities, e.g., summer camps, open air schools, nutrition classes, etc.
7. To prevent predisposing diseases and disorders, such as colds, pneumonia, malnutrition, focal infections (of tonsils), cardiovascular-renal diseases.

8. To prevent the transmission of infection so far as possible, e.g., (*a*) to avoid the spread of infection by infected persons; (*b*) to prevent contamination by sputum, by means of personal cleanliness; (*c*) to make proper use of concurrent and terminal disinfection in disposal of sputum and care of contaminated articles; (*d*) to keep the sick room in sanitary condition; (*e*) to segregate careless tuberculosis patients; (*f*) to enforce anti-spitting ordinances; (*g*) to avoid over-crowding; (*h*) to protect the milk supply from tuberculosis contamination by (1) pasteurization and cleanly production of milk, (2) Tuberculin testing of cattle.
9. To maintain the good health of individuals as a protection against tuberculosis, by (*a*) good diet; (*b*) avoidance of contaminated food and drink, and other sources of infection, such as use of common eating and drinking vessels; (*c*) use of fresh air and sunshine, and good indoor ventilation; (*d*) exercise; (*e*) avoidance of predisposing diseases; (*f*) adequate rest and sleep; (*g*) periodic health examination and proper use of physician's services.
10. To educate the public in prevention of tuberculosis.
11. To protect the public from new and unreliable cures for tuberculosis.
12. To treat and care for tuberculosis patients.

    To provide adequate institutional facilities, such as hospitals and sanatoria.

    To maintain facilities for early diagnosis of cases.

    To follow up discharged cases after they leave the sanatoria, clinics, and dispensaries.

    To provide nursing service.

    To provide outdoor air and sunshine for tuberculosis patients.

    To provide nourishing food for the tuberculosis patient.

    To educate families of tuberculosis patients in care of patient and prevention of spread of infection.

    To establish standards of home treatment of tuberculosis.

    To make provision for vocational placing of arrested tuberculosis cases and reestablishment.

    To prevent "flare up" of arrested cases.

    To prevent tuberculosis in children of tuberculous parents by (*a*) avoiding infant nursing, (*b*) having a separate room for parents, (*c*) forming cleanly habits for all members of the family, (*d*) avoiding over-crowding, and (*e*) following hygienic way of living.
13. To carry on tuberculosis research (*a*) chemotherapy of tuberculosis, (*b*) immunity of tuberculosis, (*c* relation between nutrition and tuberculosis, (*d*) tuberculin, (*e*) statistical investigations, (*f*) relation of tuberculosis to standards of living, (*g*) bacteriology, (*h*) X-ray diagnosis.

COLDS

To prevent colds.
  To isolate persons with colds during the infectious stages.
  To avoid infection, so far as possible, e.g., (1) to avoid crowds in epidemics; (2) to avoid and correct local infections and defects as of teeth or tonsils; (3) to avoid injury to mucous membranes of nose and throat; (4) to avoid irritating dusts; (5) to keep fingers and all inappropriate articles away from nose and mouth; (6) to avoid common drinking cups, common towels, etc.
  To make proper use of gargles or sprays in case of exposure to infection.
  To use the handkerchief correctly.
  To blow the nose correctly.
  To live a hygienic life with regard to diet, exercise and rest, outdoor activity, use of sunshine, proper ventilation, hygienic clothing, avoiding alcoholic excess, avoiding constipation; use of tonic cold baths, etc.
  To avoid chilling.
To consider the use of vaccines in prevention of colds and in prevention of complications and sequelae of colds.
To treat colds by (1) taking adequate rest in bed; (2) making proper use of baths; (3) keeping warm; (4) selecting suitable light diet; (5) securing good ventilation, fresh air and sunshine; (6) taking moderate exercise; (7) making proper use of physician's services; (8) making proper use of gargles, sprays, vaccines, etc., (9) making proper use of laxatives; (10) avoiding the use of patent medicines; (11) avoiding use of drugs except upon physician's advice.
To prevent and correct catarrh.

PNEUMONIA

To prevent and control pneumonia.
To avoid or correct predisposing causes, such as obesity, use of alcohol, fatigue, exposure and worry, poverty and its accompaniments of over-crowding and under-nutrition.
To practice good hygiene in general.
To prevent the spread of infection by (1) isolating patients; (2) disinfecting or destroying nasal and mouth discharges of patients; (3) preventing promiscuous expectorating; (4) avoiding over-crowded places; (5) avoiding colds, or curing them as soon as possible.
To investigate chemotherapy of pneumonia.
To treat pneumonia, e.g., (1) to secure adequate medical service; (2) to care for discharges of pneumonia patient; (3) to use serums, upon advice of physician.
To standardize antipneumococcic serums and vaccine.
To educate the public in prevention of pneumonia.
To prevent bronchitis, either acute or chronic.
To prevent other respiratory diseases, e.g., pleurisy, pulmonary congestion.

INFLUENZA

To prevent and control influenza.
To ascertain the causal organism.
To gather epidemiological data.
To educate the public with reference to means of prevention, especially during epidemics.
To avoid spread of infection by either patients or carriers, by enforcing isolation measures.
To investigate the value of influenza vaccines.
To care for influenza patients.
To prevent the introduction of influenza into the United States from foreign ports.

ACUTE ANTERIOR POLIOMYELITIS (Infantile Paralysis)

To control poliomyelitis.
To discover the causal organism and the method of transmission.
To discover cure (possibly Flexner serum).
To make early laboratory diagnosis of poliomyelitis.

DIPHTHERIA

To control diphtheria.
To establish means of preventing the transmission of diphtheria: e.g., (1) to protect milk and other foods from infection; (2) to supervise the health of food handlers; (3) to control carriers (by isolation until free from infection); (4) to isolate and quarantine patients.
To immunize non-immune individuals (by use of the Schick test to discover non-immunes and toxin-antitoxin mixture for immunization).
To standardize the manufacture of toxin-antitoxin.
To carry on research in diphtheria control.

SCARLET FEVER

To control scarlet fever.
To establish means for preventing the transmission of scarlet fever, e.g., (1) to prevent the infection of milk; (2) to isolate or quarantine patients and carriers until freed from infection; (3) to care for patients in cleanly way, using concurrent disinfection of secretions.
To investigate further the methods of immunization against scarlet fever.

MEASLES

To control measles.
To protect children, young ones especially, from exposure to measles.
To ascertain the causal organism.
To prevent spread of infection, by isolation of infected persons, especially during the early, most infectious period.

WHOOPING COUGH

To control whooping cough.
To isolate patients during the infectious stage.
To investigate further the preventive and therapeutic use of vaccines.
To avoid crowds during epidemics.

MENINGITIS

To prevent meningitis (of any type).
To control cerebrospinal meningitis, e.g., (1) to isolate patients, convalescent and carriers until free from infection; (2) to disinfect the discharges of infected persons; (3) to avoid crowds during epidemics.
To investigate further the use of serum as a preventive measure.
To use serum in treatment of meningitis.
To standardize anti-meningococcus serum.
To educate the public concerning cerebrospinal meningitis.

MUMPS

To control mumps.
To isolate infected persons, especially during the early, most infectious stages of the disease.
To control contacts.

ENCEPHALITIS

To prevent encephalitis (of any type).
To prevent lethargic encephalitis.
To investigate methods of prevention.

SUMMARY

The total number of items recorded for each of the respiratory diseases, the number of sources and the number of source divisions in which the discussion occurred is summarized in the following table:

Disease	Total Items Recorded	Number of Sources	Number of Divisions
Tuberculosis	296	18	7
Colds	146	9	3
Pneumonia	92	14	6
Other Respiratory Diseases	6	2	2
Bronchitis	11	2	2
Influenza	76	11	5
Diphtheria	90	14	6
Scarlet Fever	58	11	6
Measles	43	11	6
Whooping Cough	46	9	5
Meningitis	60	12	6
Poliomyelitis	66	10	6
Mumps	20	7	4
Encephalitis	9	3	3
Total	1,019		

Table XI which follows shows the distribution of the items concerning these diseases between the public health sources and the personal hygiene sources.

TABLE XI

DISTRIBUTION OF ITEMS RECORDED FOR RESPIRATORY DISEASES AMONG DIFFERENT SOURCES

Disease	Per Cent of Items Appearing in	
	Public Health Group; Sources 1–10; 20, 21	Personal Hygiene Group; Sources 14–19
Tuberculosis	54	46
Colds	7	93
Pneumonia	36	64
Bronchitis	50	50
Influenza	50	50
Poliomyelitis	50	50
Diphtheria	50	50
Scarlet Fever	32	68
Measles	50	50
Whooping Cough	25	75
Meningitis	50	50
Mumps	25	75
Chickenpox	25	75
Encephalitis	100	
Totals	45	55

The significance of these calculations is that they indicate that the authors of the personal hygiene texts, texts written for practical educational purposes, considered the problems of prevention of these diseases suitable subject matter for educational materials. The more significant fact, however, is that the discussion of these diseases was scattered in many different sources.

DISCUSSION

In discussing the important aspects of the prevention of the communicable diseases in this group, the following points deserve mention:

1. Many intricate, complex social problems must be included in a list of the indirect causes of these diseases; poverty, ignorance, and the organization of our present industrial system, for example. These indirect causes can be removed only by the operation of many social agencies and forces. It seems to the writer that the part which the schools can best take in this work, would be clarified by considering it in relation to the work of the other agencies involved.

2. More knowledge is needed concerning methods of protection

from the infections that are spread by "droplet infection," that is, by coughing, talking, laughing, etc., particularly in crowded places. It would be a protection to individuals to know the principles of nose and throat cleanliness, what to do at the first sign of a nose or throat infection, and how to dispose of nasal and mouth secretions in a sanitary way. It would also be a protection to know how to avoid the common sources of infections spread by respiratory discharges, e.g., common drinking cups, insanitary drinking fountains, common towels, kissing on the mouth, as well as exposure in crowds as was mentioned above.

3. Because of the large amount of sickness caused by colds, and because of the frequent harmful sequelæ, the problems of preventing colds, methods of checking them in their incipiency and curing them quickly are points upon which it is particularly important to have both additional scientific knowledge, and more widespread application of the knowledge now at our disposal.

4. Some authorities believe that it is essential for the successful control of this group of diseases that people form habits of voluntarily isolating themselves upon the first appearance of suspicious signs of disease, until it is possible to diagnose the illness and to ascertain whether or not it is infectious. Because many of these diseases are especially contagious in their early stages—stages which frequently resemble a cold—it is impossible to control them successfully so long as people continue to mingle with school and business associates during the first few days of the development of the infection. Some authorities advocate that schools should adopt the practice of exclusion of pupils when they exhibit recognized suspicious signs in order to minimize the incidence of contagious disease in the schools, and to inculcate in pupils and parents the habits of early isolation.

5. Sanitary supervision of food and milk supplies is necessary in controlling the respiratory diseases.

6. Regular hygienic habits of living, insofar as they may contribute to an increased resistance to specific diseases, help to reduce the danger of contracting these diseases.

7. Many public health authorities believe that the widespread practice of relying upon patent medicines for the cure of colds, and of seeking "sure cures" for tuberculosis indicates the need

for education. It seems to the writer that the need is not only for education in the scientific principles of hygiene, but with regard to the practical problems of securing adequate professional health service in case of illness.

8. More research is needed with regard to the use of vaccines before they can be depended upon as an effective means of preventing colds, tuberculosis, whooping cough, or any other of the diseases in this group. However, effective vaccines seem to have been made for diphtheria and scarlet fever, and investigations seem to promise success in producing a serum for measles. Any knowledge of the prophylactic value of these vaccines should be widely disseminated, if these scientific discoveries are to be fully utilized.

Diseases Spread By Contamination From Human Excreta

Typhoid Fever

To control typhoid fever, (1) in rural districts; (2) in city districts.

To provide the means for preventing the spread of typhoid, e.g., (1) sanitary supervision of food, methods of handling food and food handlers; (2) provision for safe water supplies; (3) provision for safe milk supplies; (4) control of patients, contacts and carriers; (5) disinfection of patients' discharges; (6) provision for adequate sanitary sewage disposal, (*a*) in rural districts, (*b*) in city districts; (7) provision for protection against flies, e.g., (*a*) by making adequate provision for sanitary disposal of garbage and waste, (*b*) adequate screening; (8) provision for personal cleanliness, especially washing the hands after going to the toilet, before handling food or before eating.

To make provision for anti-typhoid vaccination when needed.

To maintain standards for the production of vaccines.

To provide laboratory facilities for diagnosis of typhoid, detection of contamination in water, food, etc.

To carry on research.

To educate the public in typhoid prevention.

Hookworm (Ancylostomiasis)

To control hookworm.

To establish the means of preventing hookworm; e.g., (1) sanitary disposal of excreta; (2) disinfection of water supply; (3) protection of food from contamination; (4) habits of personal cleanliness; (5) use of shoes, instead of going barefoot; (6) improvement of economic status.

To cure hookworm by medicinal treatment.

To investigate the chemotherapy of hookworm.

To educate the public with reference to hookworm prevention.

DIARRHOEA

To prevent diarrhoea and enteritis, (1) under two years of age; (2) over two years of age.

DYSENTERY

To control dysentery, (1) bacillary; (2) amoebic.

To establish the means for preventing the transmission of dysentery: e.g., (1) sanitary disposal of sewage; (2) provision of safe water, milk and food supplies; (3) protection against flies; (4) control of carriers.

To prevent amoebic dysentery as far as possible from being further introduced into the United States.

To standardize the production of anti-dysenteric serums.

CHOLERA

To control cholera.

To establish means for preventing the transmission of cholera, e.g., (1) sanitary disposal of sewage; (2) disinfection of discharges of cholera patients; (3) provision of safe water, milk and food supplies; (4) control of flies; (5) use of vaccines; (6) personal cleanliness; (7) control of carriers.

To maintain quarantine service to prevent the introduction of cholera into the United States or her Insular possessions.

To keep informed of the prevalence and geographic distribution of cholera.

To revise the Sanitary Convention of Paris, 1912, to take into account modern knowledge of healthy cholera carriers.

DISCUSSION

The emphasis on prevention of these diseases was placed upon the following points:

1. Sanitary disposal of sewage, in cities and rural districts.
2. Sanitary personal habits in use of toilets, and particularly in washing the hands thoroughly after using the toilet, and before handling food.
3. Sanitary supervision of food, water and milk supplies.
4. Protection against flies.
5. Anti-typhoid vaccination.
6. Concurrent disinfection of the excreta of persons sick with these diseases.
7. Use of shoes (in hookworm districts).
8. Exclusion of carriers from food handling occupations.

These are problems with which both public health adminis-

trators and lay citizens are concerned. The responsibilities of the individual are discussed on pages 98 to 101.

Cholera is a disease which occurs rarely; and typhoid fever rates are low, so that it might seem that these are problems of minor importance. However, the present favorable conditions are the result of prolonged efforts, and so long as these infections exist anywhere, it is necessary to continue precautionary and protective activities. That carelessness and ignorance still have disastrous effects is proved by the occasional typhoid epidemics which still occur, and by the persistence of a death rate which meant the death of nearly seven thousand people from that disease in 1922, although enough scientific knowledge is extant, so that, if it were fully applied, typhoid fever could be completely prevented.

Hookworm is a problem of major importance in the regions of the south; and in regions where it is prevalent, educational work is one of the means used to combat its dangers.

SUMMARY

Slightly more than fifty-five per cent of the items discussing these problems appeared in the personal hygiene texts.

The number of items recorded, and the number of sources and source divisions in which the problems were discussed were as follows:

Disease	Total Items Recorded	Number of Sources	Number of Divisions
Typhoid	137	17	7
Hookworm	76	14	5
Diarrhoea	4	2	2
Dysentery	44	8	4
Cholera	45	12	5
	306		

DISEASES TRANSMITTED BY INSECTS

MALARIA

To control malaria.
To secure adequate morbidity and mortality reports of malaria.
To carry on federal demonstrations of malaria control.
To secure trained personnel to carry on malaria control activities.
To secure community coöperation in control of malaria.

To educate the public with regard to malaria control.

To carry on research with regard to malaria, e. g., to investigate (1) the effect of malaria on commerce; (2) the effect of malaria on child health, and on physical development; (3) methods of control especially in rural districts; (4) the viability of malaria parasites; (5) the life history and habits and methods of eradicating Anopheline mosquitoes.

To prevent the spread of malaria by using effective methods of mosquito control, e.g., (1) to drain swampy wet places; (2) to oil marshes, streams, etc.; (3) to stock lakes with fish (to destroy larvae); (4) to use screen and netting in protecting houses from mosquitoes; (5) to isolate malaria patients effectively from mosquitoes by use of screens and netting; (6) to use mosquito repellants effectively, e.g., cresote, sulphur; (7) to use larvicides effectively; (8) to build roads so as to avoid mosquito breeding ditches.

To carry on rice culture (in California) without encouraging the breeding of Anopheline mosquitoes.

To investigate methods of impounding water and developing water power of the south without imperiling health through an increased breeding of Anopheline mosquitoes.

To control mosquito breeding in the Yosemite.

To treat malaria.

To investigate further the methods of using quinine and Salvarsan.

PLAGUE

To suppress plague (bubonic).

To prevent its entrance into the United States by quarantine operations at ports of entry, and to prevent the spread of plague by outgoing ships.

To keep informed of the world prevalence of plague (problem of the United States Public Health Service).

To maintain laboratory service for diagnosis.

To control rodents, e.g., (1) to exterminate rats especially along water fronts; (2) to exterminate ground squirrels in infected areas; (3) to prevent spread of rats along railroad lines; (4) to protect food supplies from rodents.

To use the most effective methods of destroying rats, e.g., trapping, eliminating sources of rat food, destroying rat harbors and refuges, (e.g., dumps), rat proofing buildings, water fronts, shipping, etc.

To make rat surveys of various coast cities, and to make their water fronts rat proof.

To fumigate infected areas effectively in plague prevention.

To fumigate vessels.

To use serums and vaccines in control of plague.

To revise the Sanitary Convention of Paris, 1912, to take account of modern developments of science, especially with reference to the relation of rats to plague.

To revise United States quarantine regulations to be more effective against rats.

To spread information about methods of controlling plague.

YELLOW FEVER

To control yellow fever.

To maintain quarantine operations at ports and borders to prevent the entrance of yellow fever into the United States.

To keep informed of the world prevalence and geographic distribution of yellow fever.

To prevent the entrance into the United States of yellow fever patients, or persons in the incubation period, or persons from regions where yellow fever is prevalent.

To prevent the breeding of stegomyia mosquitoes, e.g., (1) to prevent the collection of small amounts of water around the house, e.g., in cans or barrels; (2) to prevent the breeding of stegomyia mosquitoes in irrigation canals; (3) to carry on any necessary drainage operations; (4) to educate individual householders in prevention of mosquito breeding.

TYPHUS FEVER

To prevent typhus.

To maintain quarantine measures against typhus in United States ports and in foreign ports.

To use fumigation measures for infected places, clothes and persons.

To maintain personal cleanliness.

To develop serum diagnosis of typhus.

To revise the Sanitary Convention of Paris, 1912, to take into account modern knowledge of the mode of transmission of typhus.

DEER FLY FEVER (Tulariemia)

To prevent deer fly fever.

To carry on research with regard to deer fly fever, the relation of jack rabbits, the rabbit louse, and deer flies to the transmission of the disease.

DENGUE

To control dengue fever especially by controlling the breeding of mosquitoes that transmit the disease.

ROCKY MOUNTAIN SPOTTED FEVER

To prevent Rocky Mountain Spotted Fever.

To investigate the rôle of ticks, rodents, goats and sheep in the transmission of the fever.

SLEEPING SICKNESS

To control sleeping sickness (by control of the tsetse fly).

RELAPSING FEVER

To prevent relapsing fever by cleanliness, and precautions against bedbugs, fleas, lice; by isolation of cases, and by disinfection.

DISCUSSION

Malaria is the only one of the diseases in this group which is widely prevalent in the United States at the present time. In

former years yellow fever and plague were constant menaces but the former has been practically entirely eradicated from this country; plague has been reduced to a minimum, and these diseases are now kept outside of our boundaries by the vigilance of the United States Public Health Service. Although a knowledge of the means of preventing these two diseases may seem to be of little practical value to the general public, except in rare instances, it seems to the writer that there may be an indirect value which comes from this knowledge; namely, a knowledge of the services rendered in controlling these diseases may help to create an appreciation of the value of expert health service. The history of the discovery of the rôle of the mosquito in spreading yellow fever and malaria also may have this indirect value, if no other.

Since the emphasis in malaria prevention is upon mosquito control, it is around this topic that anti-malaria education should center.

SUMMARY

Approximately eighty-two per cent of the items concerning these diseases appeared in the public health sources. The number of items recorded for these problems, the number of sources and source divisions in which the discussion was scattered were as follows:

Local Infections

Local Infections

To prevent local infections e.g. of the (1) skin (e.g. boils); (2) tonsils; (3) teeth; (4) sinuses and nasal passages; (5) appendix; (6) gall bladder; (7) urinary organs; (8) sex organs, etc.

Disease	Total Items Recorded	Number of Sources	Number of Divisions
Malaria	293	15	5
Plague	229	11	5
Yellow Fever	85	12	5
Typhus Fever	58	11	5
Dengue	20	9	5
Deer Fly Fever	24	5	2
Rocky Mountain Spotted Fever	28	8	3
Sleeping Sickness	10	3	2
Relapsing Fever	8	2	2

To use effective methods of preventing local infections, e.g., (1) keeping the skin clean; (2) avoiding injuries of the skin and mucous membranes; (3) preventing colds and infectious diseases, maintaining good resistance; (4) correcting deformities of nose and sinuses; (5) using expert dental service; (6) having a periodic health examination. (2) by removal of abscessed appendix; (3) curing infection of sinuses,

To correct focal infection, e.g., (1) by removal of abscessed teeth; etc.

Septicemia and Unspecified Streptococcic Infections

To prevent septicemia.

To standardize anti-streptococcic serums.

Septic Sore Throat

To prevent septic sore throat.

Appendicitis

To prevent appendicitis.

To ascertain the cause of appendicitis.

Rheumatism

To prevent rheumatism: (1) muscular rheumatism and neuritis; (2) acute articular rheumatism; (3) chronic rheumatism.

To avoid the infections that cause certain kinds of rheumatism; e. g., infections (probably streptococcic) of tonsils, teeth, or sinuses, influenza, tuberculosis, veneral diseases.

To cure acute rheumatism (removal of abscessed teeth or other foci of infection).

To cure chronic rheumatism.

To spread the knowledge that rheumatism caused by infections may be transmitted from one person to another, by the spread of infectious organism.

DISCUSSION

The amount of discussion recorded for the problems of prevention and correction of local infections in sources classified in this study does not indicate the total amount of reference to this question. Local infections play a large part in causing certain kinds of heart disease; certain diseases of the kidneys, of the pancreas, of the gall bladder; and other degenerative diseases, but when mentioned in connection with these problems, were recorded with these problems instead of separately. The prevention, early detection, and correction of these foci of infection is important not only to prevent damage from the primary infection, but to prevent harmful sequalæ.

SUMMARY

Approximately seventy-seven per cent of the discussion of local infections appeared in the personal hygiene texts. Many discussions of the prevention of the degenerative diseases, particularly cardiac diseases, referred to the importance of preventing and correcting focal infections. One hundred twelve items, occurring in eleven sources, divided among six divisions, were recorded for these groups.

Diseases Spread by Direct Contact

Smallpox

To prevent smallpox.
To prevent the spread of infection from one case to other persons by (1) isolation; (2) concurrent disinfection; (3) burning bedding; (4) control of contacts; (5) physician's services for cure of disease.
To utilize vaccination effectively as means of control of smallpox.
To maintain school vaccination laws.
To combat antivaccination propaganda.
To maintain effective quarantine service at our ports and borders against smallpox.

Chickenpox

To control chickenpox, by isolation of infected persons, especially during the early stages of the disease, and by control of contacts.
To ascertain the causal organism of chickenpox.

Parasitic Skin Infections

To prevent spread of parasitic skin infections, e.g., lice, ringworm, scabies.

Trachoma

To prevent trachoma.
To exclude immigrants with trachoma.
To provide hospitals and clinic service for trachoma patients.
To educate the public (in certain localities) to use trachoma hospitals for relief.

Leprosy

To control leprosy.
To maintain an investigation station in Hawaii.
To establish a federal leprosarium in the United States.
To cure leprosy.
To investigate the chemotherapy of leprosy.

SUMMARY

The total number of items recorded for these problems, and the number of sources and divisions of sources in which the discussion was scattered are summarized here.

Disease	Total Items Recorded	Number of Sources	Number of Divisions
Smallpox	99	16	6
Chickenpox	20	6	3
Parasitic skin infections	9	2	2
Trachoma	40	7	3
Leprosy	58	9	4
	226		

DISCUSSION

The diseases in this group are spread chiefly by direct contact with infected persons or with articles contaminated with infectious discharges. It is true that our knowledge of the means by which smallpox and chickenpox are transmitted is somewhat uncertain due to ignorance of the causal organisms. It is likely that smallpox may be transmitted by discharges from the respiratory tract, but this is probably less frequent than the method of direct contact.

It seems to the writer that the chief emphasis in education regarding smallpox should be placed upon vaccination. Although smallpox is not now as prevalent as in former years, the necessity still persists for education with reference to vaccination. An abstract from the report of the Surgeon General for the fiscal year ending June 30, 1925, contains the following statement:

> In spite of the fact that the measures for preventing smallpox are well known and very effective, this disease continues to be widespread and destructive. Incomplete reports from 62 countries included 218,000 cases and more than 50,000 deaths from smallpox during the calendar year 1924. The same countries reported 165,000 cases of smallpox and more then 45,000 deaths during 1923.
>
> . . . The warning issued by the Surgeon General in July, 1924, regarding the menace of smallpox in the United States proved amply justified, since reports from 35 states for the calendar year 1924 showed an increase of 75 per cent in the number of cases and 628 per cent in the number of deaths as compared with the year 1923. The smallpox case rate in the United States is at present, according to reports received, the highest of any civilized country in the world.

In districts where trachoma prevails, it is a serious problem, the gravity of which is increased because it is highly infectious. Prevention depends upon strict personal cleanliness, never rubbing the eyes with the fingers, use of individual toilet articles,

including towel, basin, soap, and handkerchief; and avoiding intimate contact, such as sleeping in the same bed with persons who are infected.

The prevention of parasitic skin infections depends upon avoiding intimate contact with infected persons, or with articles used by them, such as comb, brush, towel, or clothing.

Leprosy is so rare a disease as to be outside of the experience of the great majority of people. However, since it receives considerable publicity, and is greatly feared, it might possibly be desirable to include in an educational program a certain amount of information regarding the rarity of occurrence and the means of control. Unlike the other diseases in this group, which are highly infectious, leprosy is contracted only after intimate and prolonged contact with infected persons. One of the most interesting facts about leprosy is that a chemical substance (a derivative of chaulmooga oil) promises well for curative purposes. Most of the discussion of leprosy concerned research on this problem.

Wound Infections and Miscellaneous Diseases

Anthrax

To prevent the spread of anthrax.

To prevent the transmission of anthrax through use of improperly sterilized shaving brushes.

To prevent the transmission of anthrax by any other infected animal products, as leather gloves, by (1) killing infected animals; and (2) establishing international control (since spores are easily carried; the infectious organisms may be carried long distances and survive for a long period of time).

To standardize anti-anthrax serum.

To investigate chemotherapy of anthrax.

To revise quarantine regulations to be more effective against anthrax infected materials for use in manufacture of shaving brushes.

Tetanus

To prevent tetanus.

To use tetanus antitoxin effectively.

To establish international standards for manufacture of antitoxin.

To care for wounds in cleanly and effective, aseptic manner, especially deep wounds.

To avoid the use of dangerous fireworks.

Rabies

To prevent rabies by (1) making rabies a notifiable disease; (2) muzzling and licensing dogs; (3) educating the public in rabies prevention; (4) destroying ownerless dogs; (5) vaccinating dogs against rabies.

To carry out correct procedure in case of dog bites: (1) cauterize bite; (2) cage or tie the suspected animal; (3) secure laboratory diagnosis if dog develops disease or dies; (4) give Pasteur treatment if dog dies of rabies, or if diagnosis is suspicious.

To distribute antirabic treatment.

MALTA FEVER

To control malta fever (in some districts by sanitary supervision of goat's milk that is used for food).

FOOT AND MOUTH DISEASE

To control foot and mouth disease.

DISCUSSION

Anthrax is a rare disease in man, caused usually by an infection of a break or a scratch in the skin, by use of anthrax infected brushes, or by contact with infected animals or hides. The prevention depends chiefly upon the adequate sterilization of toilet articles, chiefly brushes made from hair or bristles of animals that might have been infected. So far as the individual is concerned, he can only protect himself by patronizing sanitary barber shops, and by buying brushes that have been sterilized.

The prevention of tetanus depends, first, upon avoiding accidents which cause deep wounds in which the tetanus bacilli find favorable anaerobic conditions for growth. The bacilli are rather widely distributed especially in areas where horse's excreta are mixed with the soil. Since they multiply, however, only under anaerobic conditions, it is the deep, punctured wounds which are favorable for their growth. This is why a wound from a nail is dangerous. Wounds from fireworks and explosives are also dangerous, due to the nature of the wound.

The knowledge that the use of tetanus antitoxin is effective in preventing the development of the disease if widely disseminated, would probably be useful because all who suffer dangerous wounds might then apply to physicians for antitoxin injections.

Rabies is more widely feared than the frequency of its occurrence justifies. It is preventable, by muzzling dogs, by giving them anti-rabic treatment and by giving the Pasteur treatment to any individual who is bitten by a suspicious animal. Education should serve two purposes; to relieve unnecessary fear of the disease, and to disseminate information as to how it may be controlled.

Foot and Mouth disease is primarily an animal disease, and it is rarely that human beings are infected. Malta Fever occurs chiefly where goat's milk is used in the diet.

Some infectious diseases are discussed elsewhere but not included in this chapter since the repetition seems unnecessary. The venereal diseases were discussed at length in Chapter III. Certain diseases, such as botulism, caused by bacterial infection of food were discussed in Chapter IV.

SUMMARY

The total number of items recorded for these diseases and the number of sources and source divisions in which they were discussed are as follows:

Disease	Total Items Recorded	Number of Sources	Number of Divisions
Anthrax	28	9	4
Tetanus	40	9	5
Rabies	56	9	4
Foot and Mouth Disease	1	1	1
Malta Fever	6	3	3
Yaws	1	1	1
General Discussion	109	14	5
	241		

General Summary

The discussion about respiratory diseases was divided between the public health sources and the personal hygiene books in the proportion of forty-six and fifty-four percentages. A total of 1,019 items was recorded for this group.

Approximately fifty-six per cent of the items recorded for intestinal diseases appeared in the personal hygiene texts. A total of 306 items was recorded for this group.

Approximately eighty-two per cent of the items concerning insect borne diseases appeared in public health sources; a total of 755 items was recorded for these diseases.

About seventy-seven per cent of the discussion of local infections appeared in the personal hygiene books. One hundred and twelve items were recorded for this group. Two hundred and twenty-six items were recorded for the "contact" diseases, and one hundred and twenty-four for the wound infections. Of the

total discussion of infectious diseases, Table X shows that forty-five per cent appeared in the personal hygiene books.

In concluding this chapter, it is well to emphasize again that the writer believes that it is not the characteristics or manifestations of the diseases which should be included in a teaching program, but rather the habits, the attitudes, and the knowledge involved in preventing the occurrence of the disease.

CHAPTER VIII

COMMUNITY HYGIENE

In almost every health problem that has been discussed in preceding pages the individual depends at some point upon the community at large or upon the organized efforts of the groups engaged in public health activities. In preceding chapters, the health problems were presented chiefly as they concerned the individual. In this, the problems are expressed in terms of community activity.

Problems of administration of public health activities are very important from the point of view of protecting the public health, and received considerable attention in the sources of analyzed. These problems, however, are essentially so technical that they need not be given here except in brief outline.

Public Health Administration Problems

To administer the activities of the United States Public Health Service: (1) Division of Scientific Research; (2) Division of Domestic Quarantine; (3) Division of Foreign and Insular Quarantine and Immigration; (4) Sanitary Reports and Statistics; (5) Division of Marine Hospitals and Relief; (6) Division of Venereal Diseases; (7) Division of Personnel and Accounts.

To finance the United States Public Health Service.

To carry on health activities in other federal departments than the United States Public Health Service, e.g., in the Children's Bureau, the Division of Vital Statistics, the Department of Education, etc.

To administer the activities of state and municipal health departments.

To administer the activities of voluntary health organizations.

To enact and enforce adequate health legislation.

To encourage the coöperation of public health organizations.

To secure adequate financial support for public health activities.

To formulate and promulgate public health standards.

To secure public interest and support for public health work. (See public health education.)

To secure adequate leadership and adequate personnel in public health work.

To secure full time health officers.

To raise the salaries of public health workers to an adequate basis.

To place the tenure of public health officers on a stable basis.
To eliminate politics from public health activities.

It is of some interest to enumerate in more detail the problems of the Divisions of Quarantine and Immigration of the United States Public Health Service.

QUARANTINE

To maintain Domestic Quarantine, to prevent the spread of disease from state to state.
To maintain quarantine stations to inspect passengers, vessels, trains, freight, to carry on fumigation and vaccination, etc.
To carry on Maritime Quarantine operations to prevent the entrance of communicable diseases through the ports and borders of the United States.
To ascertain the prevalence of communicable diseases in various parts of the world, and to prevent their spread to the United States; especially plague, yellow fever, typhus, cholera, smallpox, influenza, leprosy, typhoid, meningitis.
To secure the coöperation of foreign governments in enforcing quarantine regulations, especially in enforcing quarantine regulations at foreign ports of embarkation.
To revise quarantine regulations to make them more effective and more in accord with modern scientific knowledge, especially with regard to (1) protection against rats; (2) protection against anthrax infected materials for use in shaving brushes; (3) fumigation and disinfection of ships; (4) examination of passengers; (5) typhus control; and (6) cholera carrier control.

IMMIGRATION

To prevent the entrance into the United States of immigrants who menace the health of our population.
To prevent aliens who are physically unfit from leaving their home ports.
To conduct medical examinations of aliens desiring to enter the United States.

Organized public health activities are concerned with the following problems:

VITAL STATISTICS

To gather and interpret vital statistics: local, state, national and international.
To secure adequate weekly, monthly and annual morbidity reporting.
To secure adequate birth reporting and registration (see Child Health).
To secure the coöperation of local physicians in gathering vital statistics.
To educate the general public in the importance of morbidity reporting.
To carry on statistical and epidemiological research and investigations, e.g., to investigate the use of the Endemic Index.

To revise the International Nomenclature of Diseases and Causes of Death.

Control Of Communicable Diseases

See preceding chapter for control of specific diseases, including tuberculosis and venereal diseases, for each of which boards of health as a rule provide special departments. Problems of disinfection and fumigation, however, are listed here.

Disinfection and Fumigation

To learn the uses of the various kinds of disinfecting and bactericidal agents, such as (1) sunlight; (2) heat, (*a*) steam or boiling, (*b*) dry heat, or burning; (3) ultra violet rays; (4) chemicals, such as (*a*) chloride of lime, (*b*) copper sulphite, (*c*) chloride of mercury, (*d*) carbolic acid, (*e*) lysol, (*f*) soap; (5) deodorants.

To use disinfectants effectively in control of disease, in disinfecting (1) feces; (2) sputum; (3) bed and body linen; (4) thermometers; (5) dishes; (6) rugs; (7) books; (8) air of sick room.

To give a thorough terminal cleansing or fumigation to the sick room and other necessary portions of the house at the conclusion of certain communicable diseases.

To test the efficiency of various methods of disinfecting, e.g., of fumigating ships.

To discover an effective method of fumigation not dangerous to human life.

The child health program forms a large part of public health activities in many places. Since these problems have already been discussed, they will not be repeated here.

Child Health Activities[1]

Milk Supplies

To safeguard milk supplies.

To prevent the spread of disease through milk supplies.

To administer milk supervision activities.

To provide for sanitary production of milk, especially (1) to maintain healthy herds, especially eliminating tuberculous cattle; (2) to keep milk farms and dairies in sanitary condition; (3) to exclude all persons from handling milk who might thereby spread disease, requiring examinations for all milk handlers; (4) to pasteurize milk.

To provide for sanitary distribution of milk, e.g., (1) to provide clean transportation; (2) to keep milk at the proper temperature from time of production to delivery; (3) to keep milk depots, and creameries in sanitary condition.

To require licensing of milk dealers.

To provide laboratory service for use in control of milk supplies.

To establish standards and adequate systems for grading milk.

To prevent adulteration of milk.

[1] (See Chapter III.)

To care for milk in the home in a sanitary way.

To supervise the production of milk products (e.g. ice cream) to prevent the spread of disease.

To carry on research, with regard to methods of sanitary milk production.

Sanitary Supervision of Other Food Supplies

To protect food supplies, keeping them pure, safe and uncontaminated.

To administer and carry on the work of departments of Food and Drugs, e.g., (1) inspection of foods, including meat and shell fish inspection; (2) licensing, inspection and scoring of food establishments, including eating places, abattoirs, etc.; (3) provision for sterilization of dishes and utensils used in public eating places; (4) protection of uncooked food and drink from contamination; (5) medical supervision of food handlers; (6) regulation of sale of drugs; (7) supervision of food preserving establishments.

Water Supply

To provide safe water supplies, (1) in cities (water supply systems), and (2) in rural districts (wells, springs, etc.)

To prevent pollution of sources of water supply, especially by sewage.

To use effective methods of purifying municipal water supplies, e.g., storage, filtration, ultra violet rays, chemical treatment, laboratory control, etc.

To carry on research with regard to methods of purifying water supplies, and to formulate standard procedures.

To use effective methods of purifying water supplies in individual homes when municipal supply is unsafe.

To secure adequate expert service for protection of water supplies.

To avoid danger from impure ice.

To eliminate the common drinking cup.

Sewage Disposal

To provide adequate, safe sewage disposal:

1. In cities.
   - To construct and maintain sewerage systems, and sewage disposal plants.
   - To eradicate the insanitary privy within city limits.
2. In rural districts.
   - To replace insanitary privies by sanitary methods of sewage disposal.
   - To control the use of cesspools.
   - To maintain adequate sanitary scavenging service.
3. In camps and summer hotels.
4. On railroad properties.

To prevent sewage pollution of streams and sources of water supply.

To carry on research, e. g., with regard to (1) pollution and purification of streams; (2) soil pollution dangers; (3) methods of making sanitary disposal of excreta in unsewered districts; (4) biochemistry of sewage.

To secure adequate board of health administration of sewage disposal activities.

To maintain public toilets in sanitary condition.

GARBAGE

To make a sanitary disposal of garbage and rubbish.

STREET CLEANING

To keep city streets clean.
To prevent careless spitting.

INSECTS

To eliminate insect carriers of disease.
To prevent the spread of disease by flies, by (1) destroying breeding places; (2) keeping manure and garbage covered; (3) fly proofing privies, and using calcium chloride in privies; (4) using traps, sticky fly paper, and fly poisons; (5) encouraging the breeding of birds; (6) general cleanliness of premises (see typhoid and cholera, especially).
To prevent the breeding of vermin, such as (1) ticks (see Rocky Mountain Spotted Fever); (2) bed bugs; (3) fleas (see plague); (4) lice.
To prevent the breeding of mosquitoes (see malaria and yellow fever).

HOUSING

To secure healthful housing conditions—especially with regard to heating, lighting, ventilation, sanitary equipment, overcrowding, provision for sunlight, etc.
To provide for sanitary supervision of housing conditions.
To enact suitable legislation for housing regulation.

PLUMBING

To install good plumbing, and to maintain it in hygienic condition.

HEATING

To heat buildings healthfully, choosing the method best adapted to the building, e.g., stoves, hot air furnaces, hot water or steam, oil, gas, electricity, etc.

VENTILATION

To provide the essentials for healthful ventilation.
To provide for adequate motion of the air.
To utilize air fans.
To open the windows in the best way for air movement.
To secure an outdoor quality of freshness in the air within doors.
To provide for abundant sunlight in houses.
To avoid, prevent or remove harmful impurities in the air, e.g., (1) irritating or poisonous dusts; (2) poisonous gases; (3) bacteria; (4) disagreeable odors; (5) harmful pollens; and (6) smoke (especially in cities).
To maintain the most healthful indoor temperature (65°-68° F.)
To maintain the most healthful degree of humidity, especially to avoid excessive dryness.
To install the most effective, healthful systems of ventilation in homes and public buildings.

To secure good ventilation in cellars.
To prepare standards for ventilation.
To educate the public with regard to ventilation.
To correct the notion that "night air" is harmful.

INDUSTRIAL HYGIENE

To secure healthful conditions in industry.
To protect the health of women in industry.
To regulate women's work in industry healthfully during (*a*) menstrual period, (*b*) child bearing period.
To protect the health of children in industry.
To make adjustments to each individual for health.
To organize industry so that man may express desirably his natural instincts; constructiveness, workmanship, self assertion, ownership, and parental instincts.
To provide for variety in work.
To educate the public concerning occupational diseases.
To train expert industrial hygienists.
To interest industrial employers and employees in hygiene.
To establish healthful length of working day.
To lessen fatigue in industry.
To reduce specific industrial hazards, e.g., from accidents in mines, quarries, etc., from poisons, dusts, extreme temperatures and humidities, etc.
To maintain general sanitation of industrial plants, with regard to (1) ventilation, especially control of dusts; (2) noise; (3) sanitary equipment (toilets, etc.); and (4) lighting.
To improve the sanitation of industrial communities, (1) to prevent mosquito breeding adjacent to shipyards; (2) to improve sanitation of coal mining camps and communities.
To make sanitary disposal of trade wastes.
To secure industrial morbidity and mortality reports.
To investigate the causes of industrial absenteeism.
To provide adequate medical service in industry, e.g., (1) clinics, (2) health examinations for each worker; (3) nursing service; (4) lunchroom and nutrition service; (5) wet weather protection; (6) venereal disease prevention; (7) education; (8) mental adjustments; (9) provision for rest periods, vacations, sick leave; (10) sanitarium service; (11) recreation.
To provide satisfactory plans for sickness and accident insurance.
To maintain a federal consulting service for advice on technical questions of industrial hygiene.
To enact adequate legislation in industrial hygiene.
To establish minimum standards of industrial hygiene.
To conduct research in industrial hygiene problems.

TRANSPORTATION

To protect the travelling public from disease.
To establish standards for sanitary equipment on railroads—with re-

gard to—(1) ventilation; (2) general cleanliness of coaches; (3) sanitary toilets and methods of sewage disposal; (4) elimination of common towels; (5) sanitary sleeping arrangements; (6) minimizing expectoration; (7) screening; (8) sanitary supervision of water supply on railroads and vessels in interstate travel.

To supervise, investigate and analyze the sources of drinking water used on railroads and ships.

To provide sanitary containers and a sanitary system of handling drinking water used on railroads and ships.

To eliminate the common drinking cups.

To enact legislation against the pollution of interstate streams.

To protect the health of railroad employees.

To supervise the interstate travel of diseased persons.

To maintain sanitary automobile camps, especially with reference to sewage disposal and water supply.

National Parks

The ever-increasing amount of summer touring has made the sanitation of our national parks an acute problem. The chief problems are indicated below.

To maintain sanitary and healthful conditions in the National Parks with regard to (1) water supply; (2) sewage disposal; (3) garbage disposal; (4) mosquito control; (5) supervision of milk supply; (6) kitchen sanitation and food supervision; (7) medical attention, (*a*) at hotels, (*b*) at camps.

Laboratory

To provide public health laboratory service (in general).

To maintain hygienic laboratory service of the United States Public Health Service.

To carry on research—in nutritional diseases, infections, pathology, etc.

To provide laboratory diagnostic service.

To make chemical and bacterial examinations of milk, water, food and drugs.

To make chemical and bacterial examinations of sewage.

To examine and test disinfectants.

To give laboratory service to physicians of the Indian Service.

To maintain laboratory for chemical service in industrial hygiene work.

Biological Products

To control the production and distribution of biological products, e.g., viruses, sera, toxins, vaccines.

Research

To maintain divisions of scientific research.

To establish research institutions.

To divert scientific inventive genius from war inventions to public health.

To conduct research regarding: (1) biochemistry, (2) cancer, (3) causes and reduction of diseases of middle age, (4) child hygiene and infant mortality, (5) dengue, (6) diphtheria, (7) epidemiology, (8) food poisoning, (9) industrial hygiene, (10) laboratory technique, (11) leprosy, (12) malaria, (13) malta fever, (14) mental hygiene, (15) milk, (16) pellagra, (17) physiology, (18) protozal diseases, (19) public health administration, (20) respiratory diseases, (21) Rocky Mountain Spotted fever, (22) sewage disposal, (23) stream pollution, (24) tropical medicine in coöperation with Porto Rican authorities, (25) tuberculosis, (26) typhoid, (27) yellow fever.

SUMMARY

Table X shows that about eighty per cent of the discussion of the problems just listed occurred in the public health sources, and about eighteen per cent in the personal hygiene books.

The total number of items recorded for each group of problems, and the number of sources and source divisions in which the discussion was scattered are given below:

	Total Items Recorded	Number of Sources	Number of Divisions
Public Health Administration	529	14	5
Quarantine	110	1	2
Immigration	89	8	3
Vital Statistics	202	14	6
Disinfection and Fumigation	81	9	4
Milk Supplies	81	10	4
Food Supplies	39	8	5
Water Supply	100	15	5
Sewage Disposal	125	11	5
Garbage	10	5	4
Street cleaning	4	3	3
Control of Insects	41	8	4
Housing	20	6	4
Plumbing	1	1	1
Heating	14	2	1
Ventilation	174	12	5
Industrial Hygiene	296	13	6
Transportation	96	7	3
National Parks	30	3	1
Laboratory	84	9	5
Biological Products	52	6	2
Research	57	7	2
	2,235		

Discussion

A scrutiny of the mass of details just presented reveals two general problems which, in one phase or another, are common to

each group of problems. These two general problems concern the relationship of the laity to professional public health service. The first problem is to secure the layman's understanding, his appreciation, and his support of the public health service rendered by professional people. The second problem is to get the layman to complete the task which the professional public health worker has begun. The initial step in carrying on public health activities comes from professional workers, but in almost every case, the full success of a public health enterprise depends upon a final step which the lay citizens must take. A board of health may supervise the production of clean, pure milk, but housewives must learn to appreciate pure milk so much that they buy it in preference to less safe, although perhaps cheaper, milk.

Specific mention may be made of some of the situations in which these two problems are involved.

To understand and appreciate public health service, the average individual needs a more comprehensive knowledge than he at present possesses of the actual services rendered by federal, state, and municipal health organizations. The unceasing activities of the quarantine officers of the United States Public Health Service in protecting us from invasion by disease; the important, but unspectacular task of keeping informed of the prevalence of communicable diseases; the research activities that are carried on in various laboratories, as well as the important routine work of the laboratory—all of these and many more are essential activities in protecting the public health, but the average citizen does not know that such problems exist.

The consequence of this failure to enlist the support of the public is that in city councils and in state legislatures, as well as in Congress, it is too often very difficult to secure adequate appropriations to carry on essential public health activities.

The work of some of the voluntary health organizations is better known than that of government departments. This is particularly true of the Red Cross and the National Tuberculosis Associations, and this better knowledge is due both to extensive publicity and to the fact that much of the work of these organizations is carried on with the voluntary assistance of nonprofessional people, in committees, or "chapters," or "leagues."

The standard of the professional ability of public health work-

ers depends to a certain extent upon public appreciation of the value of their services and upon willingness to give a fair remuneration for the expert services received, and upon the quality of work which public opinion demands. It is of particular importance that politics should be eliminated from the selection of public health officials.

In some very important ways, the success of a public health program depends upon the actions of individuals. One of the necessities in successful control of communicable disease is isolation of the patient during the infectious period of illness. In many instances, the disease is highly infectious in the early stages, during the period when people too often postpone calling a physician, and try to keep on working or going to school, under the delusion that they must "keep going as long as possible"—thereby scattering infection wherever they go. While children are in school, the early signs of illness may be detected through an efficient system of daily inspections, but in most business concerns the machinery does not exist for detecting communicable disease in its early stages. The carelessness of individuals therefore reduces the effectiveness of the most carefully planned campaign against communicable disease.

Another phase of communicable disease control is the gathering of morbidity statistics. The epidemiologist depends upon these statistics for knowledge of the danger spots when and where an epidemic threatens. If communicable disease is promptly reported in its early stages, he can foresee danger, and in many cases, measures may be taken to forestall it. The burden of reporting communicable disease usually falls upon physicians and nurses, but in the majority of instances, they only report a case after they have been called by the patient. Here again, the coöperation of the layman is necessary for the successful protection of the public health.

The sanitary supervision of food and milk supplies demands technical professional service; but for his own protection, the layman should understand the essentials involved in producing and distributing safe, pure food and milk. Such knowledge enables him to use good judgment in selecting the dealers from whom he secures his supplies. In addition to this, it is necessary for the individual householder to care for food and milk in the home. This is an even more important problem for rural than

for urban householders, since in rural districts each household produces a considerable portion of its own food and milk supplies.

The same difference between city and rural problems exists in securing safe water supplies. The city dweller's immediate responsibility for the purity of his water supply is very slight (although indirectly, as a citizen, he is responsible for demanding and receiving a high quality of service). He needs to know whether or not the city water supply is pure; and in periods of danger, he needs to know what precautions he can take, in the home particularly, to make the water safe. He also needs to cultivate sanitary habits of drinking, avoiding common drinking cups, insanitary fountains, and so on. However, the individual householder in most rural districts has the entire responsibility for protecting his own water supply.

The sanitary disposal of sewage is another technical problem with which the individual city dweller has little direct contact. Formation of habits of personal cleanliness and the maintenance of toilets in a sanitary condition are his chief responsibilities. The individual in rural districts, however, as a rule, must provide his own system of sewage disposal.

The control of insects, particularly flies and mosquitoes, that are dangerous to the public health, is a matter for which individual householders are largely responsible, except in the large drainage projects which are carried out in malaria control.

In matters of housing, the public health officer has little control in districts where families live in their own individual homes. In cities, where tenements and apartments abound, municipal regulations become important, but through the great mass of our population, it is the family unit that controls ventilation, heating, lighting, and conditions of overcrowding in dwelling places.

The sanitation of public buildings is a matter depending largely upon official control, but even then, the personal habits of the persons who use the buildings constitute an important element in the ultimate healthfulness of the building.

The same is true to some extent of the equipment of railroads and ships. The United States Public Health Service assures travellers a safe water supply on trains and ships, in interstate traffic. The railroad companies provide sanitary equipment.

Then the individual traveller must complete the protection of public health by practicing habits of personal cleanliness.

Problems of keeping our national parks in a sanitary condition also involve the coöperation of individual travellers. Particularly at camping sites, the sanitation of the parks depends upon the traveller's knowledge and practice of sanitation.

The protection of the health of industrial workers depends upon the enactment of legislation, the administration of technically trained experts; upon research to discover more dependable protective devices than are now used, and upon other complicated factors. But here also the individual must coöperate if the protective program is to be effective at every point. A certain degree of intelligent understanding of safety devices is necessary, for example, if the worker is to use them successfully. Sanitary conveniences, health service programs providing clinics, health examinations, and other health service features all depend for their ultimate success upon the worker's coöperation.

The conclusion is inescapable that a public health program cannot succeed if it is relegated to public health officers, and then ignored by an ignorant or indifferent public.

In short, it is the writer's opinion that to ascertain the educational implications of the existence of these problems it is first necessary to analyze the relationship of the individual to the public health activity.

CHAPTER IX

USE OF PROFESSIONAL HEALTH SERVICE

The use of professional health service will always be necessary. The increasing complexity of civilized life, and the rapid specialization of knowledge, are enough in themselves, were there no other reasons, to destroy the idea that educating the public will do away with the need for professional health workers.

The problems which were discussed were as follows:

MEDICAL SERVICE

To select a capable physician, surgeon, or specialist, to render whatever service is needed.

To secure adequate medical service in remote districts.

To judge the value of doubtful forms of medicines; e.g., medical treatment, chiropractic, osteopathy, etc.

To disseminate information by which people may judge the real value of Christian Science.

To adjust the activities (and ethics) of the medical profession to modern social conditions and organizations; e.g., in providing life extension service.

To keep the medical profession abreast of modern scientific knowledge.

To provide better grade obstetrical service.

HEALTH EXAMINATION

To increase the number of persons taking periodic health examinations.

To increase the number of physicians trained in making health examinations.

The importance of the periodic health examination lies in the fact that it discloses diseases in their incipiency while they may still be cured, and discovers remediable defects that should be corrected. In discussions of the prevention of cancer, of the degenerative diseases, of focal infections of teeth or tonsils, of tuberculosis; the periodic health examination is given a particularly prominent place. The Life Extension Institute makes the annual examination the pivot of all its activities.

Through the health service program of the schools, many children become accustomed to the idea of a regular examination.

In many instances, its full educational possibilities are not utilized, however.

NURSING

To provide adequate public health nursing service.
To administer and organize public health nursing.
To secure adoption of uniform standards in public health nursing.
To finance public health nursing.
To provide education with regard to home care of the sick.

HOSPITALS

To maintain (or establish) adequate hospital service.
To carry out an adequate program of hospital social work.

HEALTH CENTERS

To establish and maintain community health centers, clinics, dispensaries, etc.
To make expert health service available to the public at a minimum expense.
To coördinate the efforts of separate health agencies.

NOSTRUMS AND QUACKERY

To prevent the practice of quackery.
To prevent or minimize dangerous fads or cults.
To control the use of patent medicines and nostrums.
To decrease the practice of using self-prescribed medicines or drugs.
To secure the coöperation of druggists in regulating the sale of self-prescribed drugs.
To enact and enforce legislation for controlling the sale of nostrums.
To enforce the "Pure Food and Drugs Act."
To educate the public to judge intelligently of patent medicines, quackeries, fads and new cults.

The amount of money spent on patent medicines, and the flourishing prosperity of many quacks, give material proof of the seriousness of the problem.

SUMMARY

The problems of using professional health service, either public or private, pervade many of the other health problems discussed in this study. The health service problems listed in this group appear in nineteen different sources, scattered among six divisions. A total of two hundred and eighty-one items was recorded for this group.

DISCUSSION

The problem of making the best use of professional health

service is one which most people meet at some time or other. In most cases, it is in times of crises, of birth or illness, that the members of a family come into contact with the physicians, the surgeon, or nurse. If this were the whole of the problem, it would be important, but this problem gains further significance when viewed from another aspect; the necessity for learning to use professional health service to prevent ill health. Some authorities believe that the public will profit most largely in learning to go to physicians and specialists for periodic examinations. The relationships of the layman to the professional group may be outlined as follows:

The layman needs to know

1. When to call for professional assistance.
2. What sort of professional assistance to seek, and where to find it.
3. What the professional and the layman may expect from each other in the way of service, consideration, and fees.

People naturally call for a physician when faced with a crisis in health.

The new thing that some authorities claim that people need to learn with reference to the first point, is to form the habit of having a periodic health examination; to call upon the physician regularly for an overhauling. Many physicians recommend that parents should do this for their children in the first two or three years of life every six months (oftener in the first year); in childhood and adolescence every year. In the twenties and thirties every other year may be enough, although the annual examination can do no harm, and after forty should be the rule. The dental examination should probably be made semi-annually, or every four months.

In case of illness the important thing is to secure professional attention when the first early signs of sickness are noticed. It is also important to have defects corrected in their incipiency. People also need to learn to seek professional aid upon the appearance of the early signs of mental illness.

The second question, what sort of professional assistance to seek, and where to find it, is not easy for the layman to answer. He should consider the matter of professional training experience, reputation, and special skill. The layman rarely has the information at hand with which to judge these things, and fre-

quently does not know the relative merits of one professional school as compared to another. This is a problem of particular importance in judging the value of the doubtful forms of medical practice, such as chiropractic. The public would be protected learning to inquire into the requirements of professional education which are demanded by any school of medicine.

Another problem arises from the fact that there is an ever increasing number of legitimate specialists in the field of health, and the layman is often puzzled to know whether to call a general practitioner or a specialist, and, if a specialist, which kind.

The problem of where to secure the needed professional attention is usually easy to solve in cities. Clinics, hospitals, and physicians in private practice are plentiful. In remote rural districts, however, there is often a tragic lack of professional service. This is one of the difficult problems of rural health. In 1923, only eleven per cent, approximately, of the counties in the United States had full-time public health officers, and the number of private physicians practicing in rural districts has been steadily decreasing. Rural hospital and clinical facilities are also meager. Rural populations need to be roused to solve these problems in a constructive way.

Even in cities, where facilities are plentiful, the public is often ignorant of the opportunities which are available. If information about the services rendered by reliable health organizations, by clinics, hospitals, laboratories, and other agencies were in the possession of all within the reach of these services, the usefulness of these institutions would doubtless be increased.

All of these problems have an important bearing upon another problem—the popularity of fads, quackeries and patent medicines. An appreciation of the scientific preparation required if health service is to be reliable, combined with a knowledge of available, reliable health service, should help to lessen the practice of depending upon self-prescribed drugs, upon fads, and quacks, which is so prevalent in this country.

CHAPTER X

TEMPERANCE EDUCATION

ALCOHOL

To prevent the harmful use of alcohol.
To devise effective means of solving the alcohol problem.
To enforce prohibition laws (duties of Treasury Department).

The problem of controlling the use of alcohol is one of the acute problems of the day. The prohibition question is so prominent that no proof need be offered to convince the most casual observer that it is one of the serious difficulties of the present time.

The greater part of the discussion of these problems appeared in the books dealing with personal hygiene, although they were also emphasized in *National Vitality* and *Public Health in the United States.*

TOBACCO

To avoid the misuse of tobacco.
To break the tobacco habit when formed.

The items in the discussion of the use—or misuse—of tobacco appeared, with two exceptions, in the personal hygiene books and dealt principally with the physiological effects of the use of tobacco. These questions were also discussed by Fisher in *National Vitality.*

NARCOTICS (exclusive of tobacco)

To prevent or control the use of habit forming drugs (narcotics).
(1) in patent medicines.
(2) in pure drug form.
To secure international agreement in control of narcotic drugs.
To ascertain prevalence of use of habit-forming drugs.
To investigate the nature, biochemistry, physiology, psychology, pathology and therapy of drug addiction.
To cure drug addiction.

The problem of prevention of narcotic drug addiction (exclusive of tobacco) is rendered peculiarly difficult because it is

a secret vice, and it is extremely difficult under present circumstances to block the channels of transportation.

This problem was discussed in the publications of the United States Public Health Service, and in the annual reports of the service; in *National Vitality* and *Public Health in the United States;* in the report of the American Public Health Association in "Municipal Sanitation," and in five of the books on personal hygiene.

A total of one hundred and seventy-nine items was recorded for alcohol, tobacco and other narcotics.

DISCUSSION

There can be no doubt that these problems exist although there may be considerable disagreement as to what the schools should attempt to do about them.

These three groups of problems, concerning the misuse of alcohol, tobacco, and other narcotics seem to the writer to indicate the need for temperance education.

Temperance education, it seems to the writer, involves (1) the presentation of scientific evidence regarding the effects of misusing alcohol, tobacco and other narcotics, and (2) the presentation of the moral and social factors involved.

CHAPTER XI

ACCIDENT PREVENTION

The first twenty-four problems listed in Accident Prevention are taken from the items in the report of the Bureau of the Census, which tabulates the deaths in the United States from violence or accidents. The list is headed by traffic accidents, accidents due to falls, to burns, to suffocation, and to drowning. Safety education campaigns aimed at the prevention of such injuries have been effectively carried out in enough schools and communities to prove the value of education in helping to solve this group of problems. The Safety Education program falls into two main divisions: (1) prevention of accidents, and (2) training in giving first aid in emergencies.

Aside from the enumeration of accidents in the census reports (Source 1), these problems were discussed in two of the personal hygiene texts and in the reports of the life insurance companies. Furthermore, the accident statistics of the country, and the success of safety education activities in reducing the number of accidents in certain cities, prove the value of this phase of a health education program, even though the sources analyzed in this study give it a relatively small amount of emphasis. More than 16,000 deaths were reported in 1923 from automobile accidents alone.

That this is a problem with which educators should be concerned, and with which many of them are concerned, is shown by the fact that Part I of *the Twenty-fifth Yearbook of the National Society for the Study of Education* is devoted entirely to "Safety Education."

ACCIDENT PREVENTION

To prevent deaths or injuries from (1) violence; (2) automobile accidents; (3) railroad accidents; (4) street car accidents; (5) other vehicular accidents; (6) falls; (7) conflagrations; (8) other burns; (9) absorption of deleterious gases; (10) fire arms; (11) machine accidents; (12) cutting or piercing instruments; (13) aeroplane accidents; (14)

landslide or other crushing; (15) animals; (16) lightning; (17) electricity (except lightning); (18) fracture (cause not specified); (19) excessive heat; (20) excessive cold; (21) starvation; (22) other external violence.

To prevent deaths from drowning.

To prevent deaths from homicide.

To care for wounds.

To prevent infection of wounds, (1) accidental wounds; (2) surgical wounds.

To dress wounds properly, e.g., (1) to keep wounds clean, making proper use of antiseptics, etc.; (2) to bandage properly.

To care for various kinds of wound, e.g., (1) punctured; (2) scalp; (3) bullet.

To care for wounded limb, e.g., (1) to make and use splints.

To secure surgical treatment for severe wounds.

To prevent wound bleeding, (1) arterial; (2) venous.

To give treatment for shock.

To avoid poisoning from poison ivy.

To prevent acute poisoning (other than food poisoning).

A total of fifty-three items was recorded for this group of problems, appearing in six sources, divided among four divisions.

CHAPTER XII

INTERPRETATIVE MATERIAL

In the sources analyzed, there appeared a considerable amount of what it has seemed convenient to classify as interpretative material. This falls into four classes; (1) discussion of public health education, (2) of life extension, (3) of rural health problems, and (4) of the economic and social aspects of public health. This grouping serves to simplify the presentation of certain complicating factors in a discussion of health problems.

Public Health Education

To arouse public interest in health, overcoming indifference, both to personal and public health, and creating an appreciation of the importance of health and public health work.

To educate the public to support health ordinances and regulations.

To control health conduct by creating high ideals with dynamic force, e.g., (1) to strengthen ideals of service, and social responsibility; (2) to create a positive, constructive ideal of health; (3) to improve American ideals of perfect manhood and womanhood; (4) to create among adults a desire for positive health; (5) to measure health in terms of vigor, resistance, and positive vigor rather than by morbidity and mortality; (6) set up standards of health; (7) to create high ideals of race culture; (8) to substitute ideals of happiness and health for those of wealth.

To establish a scientific habit of judging on a fact basis rather than in accordance with prejudice or superstition.

To destroy health superstitions. (See quackery.)

To educate people to withstand the appeal to fear as used, for example, in patent medicine advertising.

To make the most reliable and recent scientific knowledge about health available to the public, e.g., with regard to laboratory tests that are available for diagnosis of disease, or with regard to standard public health procedures and professional opinion concerning them.

To develop an understanding of the preventability of disease, destroying the attitude that disease is inevitable.

To change the idea that man's life cycle is fixed at its present limit.

To establish the conviction that health is generally attainable through individual effort.

To change the conception (held by some people) that life is not worth prolonging.

To disseminate information.
To utilize all possible means of public health education: e.g., publications, bulletins, pamphlets, newspapers, libraries, magazines, movies, radio, lectures, exhibits, etc.
To improve the quality of health information in the press.
To encourage health education activities in schools and colleges.
To encourage physicians to utilize their opportunities for educating the public.
To train public health workers: e.g., teachers (for school health work); sanitarians, nurses, physicians, etc.
To develop the preventive, constructive ideal in medicine.
To provide means for the additional education of workers already in service, e.g., conferences, institutes, etc.

These problems are for the most part psychological, dealing with the necessity for changing the attitudes, motives, and ideals, and habits of thought. The more directly informational aspects of public health education are only implied in this section. It is of course necessary to disseminate scientific information as well as to change ideals and attitudes.

The items of this group were widely scattered in seventeen different sources. Considerable emphasis was given, in the annual reports of the Surgeon-General, to the necessity for public health education, and to reports of actual educational activities. This amounted to approximately thirty per cent of the items appearing in the discussion under Public Health Education. The rest of the items were widely scattered.

Life Extension

To prolong life, and to improve the quality of life.
To conserve adult life, making the later years of life productive.
To increase the length of the health span.
To reduce the mortality of middle life.
To postpone deaths from old age.
To change the idea that man's life cycle is fixed at the present limit.
To change the conception that life is not worth prolonging.

In the sources analyzed there was considerable discussion of general problems of health and disease. The important phases of this discussion are summed up under the heading "Life Extension." The central themes are the improvement of the quality of life, the lengthening of the years of vigor and health; and the essential preventability of disease. These ideas were discussed in eleven sources: *National Vitality, Public Health*

in the United States, three of the personal hygiene texts, and in the materials from the insurance company and the Life Extension Institute. The importance of these general discussions lies in their emphasis on a positive, constructive health program.

RURAL HEALTH

There are certain problems which are especially pressing in rural districts. These are, in brief, problems of sewage disposal, water supply, sanitation of milk and other food, sanitation of premises, and problems of securing adequate professional health service. Most city dwellers do not feel the pressure of these problems, because the municipal health service is responsible for making sewerage adequate, and water and food supplies safe; and because expert professional health service is plentiful in most cities. But in rural districts, these problems must be solved by each individual householder, as a rule.

Rural Sanitation Bulletin 94 of the United States Public Health Service reports a survey of 51,544 rural homes in fifteen different counties scattered in thirteen different states. The survey showed that in twelve of the counties, over 98 per cent of the homes used grossly insanitary methods of disposing of human excreta. One county showed grossly insanitary conditions in 97 per cent of homes, another in 94 per cent, and a third in only 91.9 per cent—the best record made by any of the counties.

The difficulties of providing rural homes with safe water supplies are also indicated by the results of this survey. The percentage of homes with unsafe water supplies ranged in the fifteen counties, as follows: 33%, 36%, 40%, 48%, 55%, 56%, 58%, 67%, 69%, 71%, 72%, 76%, 79%, 93% and 95%.

Another interesting thing revealed by this survey was the number of homes without screening. In two counties less than 3 per cent of the homes were unscreened; in one county, only 10 per cent, in another only 14 per cent. In three counties, between 20 and 30 per cent; in two counties between 30 and 40 per cent; in one county, 57 per cent; in another 62 per cent; and in four counties, more than 75 per cent were unscreened. The general cleanliness of the premises was also reported in a rather crude way. Thirty-nine per cent were graded as "good," an

equal number "fair," and 17 per cent as "poor"; the remainder not being recorded.

Such facts suggest to the writer that in rural districts, matters of sanitation depend so much more upon the actions of individual citizens than in cities, that rural schools should give a relatively larger emphasis to these problems than the city schools.

Reprint No. 833 of the United States Public Health Reports shows that only 11.58 per cent of the rural population was served by whole time health officers in 1923. This is evidence of another acute health problem in rural districts, that is, the problem of securing adequate professional health service.

The health problems which were discussed in relation to rural districts may be summarized as follows:

RURAL HEALTH

To encourage the development of professional health service in rural districts.
To obtain efficient whole time county health service.
To secure adequate medical service.
To secure adequate rural public health nursing service.
To create popular interest in supporting rural health service.
To enact modern county health legislation and to enforce it.
To make sanitary disposal of sewage in rural districts.
To provide safe water supplies.
To provide safe supplies of milk and other foods.
To provide sanitary equipment at eating establishments.
To keep premises in sanitary condition.
To care for animals hygienically.
To keep manure covered from flies.
To eliminate rodents and dangerous insects.
To prevent the breeding of malaria mosquitoes.
To build healthful farmhouses.
To screen houses.
To place the stable at an adequate distance from the house.
To control communicable diseases in rural districts, e.g., (1) malaria; (2) typhoid; (3) to immunize children against diphtheria; (4) to reduce the incidence of hookworm; (5) to reduce the incidence of venereal disease.
To maintain public buildings in rural districts in sanitary condition; e.g., churches, schools, stores, dairies, etc.
To establish adequate health service in rural schools.
To carry on public health education in rural districts.
To give federal aid to encourage rural health work through demonstration, financial aid, and carrying on research.

Because of the increasing facility of transportation by automobile, conditions of rural sanitation assume a growing importance. When several hundred thousands of persons are making cross-country touring trips every summer; staying in camps, small towns, and villages by the way; the water supplies, for example, of the rural places affect the health, not of dozens or hundreds, but of thousands of persons.

TABLE XII

SANITATION OF RURAL HOMES[1]
FINDINGS AND RESULTS OF SURVEY FOR 51,544 COUNTRY HOMES

County	Per Cent of Country Homes with Grossly Insanitary Disposal of Human Excreta	Per Cent of Country Homes Improving Excreta Disposal After Survey	Per Cent of Homes with Unsafe Water Supply	Per Cent of Homes in Which Water Supply Was Improved	Per Cent of Homes Without Screening	Typhoid Reduction
Berkeley, W. Va....	99.76	21.40	67.20	16.48	26.70	very marked
Lawrence, Ind.....	99.75	36.09	56.00	5.35	26.62	marked
Union, Miss.....	99.80	6.95	76.15	5.00	76.00	marked
Dorchester, Md.....	98.92	30.60	36.50	8.00	32.14	very marked
Anne Arundel, Md...	94.35	41.05	48.41	11.00	28.00	slight
Wilson, Kans.....	98.84	22.00	33.05	30.00	2.48	marked
Orange, N. C.....	99.92	14.97	95.65	11.33	80.00	marked
Walker, Ala.....	91.88	21.23	72.36	5.80	75.00	very marked
Dallas, Iowa.....	97.29	23.40	40.00	10.80	2.14	slight
Greenville, S. C.....	99.61	19.89	93.42	5.00	57.76	marked
Floyd, Ga.....	98.19	62.55	79.00	10.00	79.96	very marked
Tuscaloosa, Ala.....	99.12	11.39	56.00	6.08	62.80	marked
Obion, Tenn.....	99.78	8.92	71.79	1.20	36.40	marked
Clay, Mo.....	99.33	15.60	69.93	4.60	14.01	slight
Cumberland, Ill.....	99.83	17.00	55.00	5.50	10.18	not yet determined

[1] *Rural Sanitation.* A Report on Special Studies Made in Fifteen Counties, 1914, 1915, and 1916. Public Health Bulletin No. 94, Washington, D. C., Government Printing Office, 1918, pp. 43-44.

TABLE XIII

GENERAL CLEANLINESS OF RURAL HOMES[1]

County	Good	Fair	Poor	Not Recorded	Total	Stable Manure Properly Protected from Flies
Berkeley, W. Va.....	1,323	673	358	123	2,477	6
Lawrence Co., Ind.....	1,495	1,355	624	75	3,549	31
Union Co., Miss.....	1,032	1,194	668	101	2,995	4
Dorchester Co., Md.....	1,635	1,307	960	189	4,091	11
Anne Arundel Co., Md...	3,135	2,250	1,484	674	7,543	160
Wilson Co., Kans.....	3,455	772	163	---	4,390	33
Orange Co., N. C.....	1,187	775	386	138	2,486	1
Walker Co., Ala.....	1,008	2,373	1,483	23	4,887	86
Dallas Co., Ia.....	1,652	475	79	103	2,309	560*
Greenville Co., S. C.....	1,671	5,074	1,851	156	8,752	---
Floyd Co., Ga.....	876	1,874	442	418	3,610	41
Tuscaloosa Co., Ala.....	293	922	127	21	1,363	---
Obion Co., Tenn.....	1,570	1,171	461	27	3,229	0
Clay Co., Mo.....	861	1,135	259	7	2,262	31
Cumberland Co., Ill.....	-----	-----	-----	(2378)	-----	-----
Total.....	21,183	21,350	9,335	2,055	53,943	964
Per Cent.....	39.2	39.5	17.3	3.8	-----	1.7

[1] *Rural Sanitation, op. cit.* Compiled from data on pages indicated in the table of contents of the bulletin, p. 4.

* Removed monthly in summer.

"General cleanliness" applied to rubbish such as waste paper, rags, ashes, tin cans, leaves, and to garbage and other kitchen refuse; to litter from stables, pigsties, and chicken pens, scattered about the yard, and to collections of dirt or dust inside the dwelling.

ECONOMIC AND SOCIAL ASPECTS OF PUBLIC HEALTH

That the prevention of disease is an extremely complex problem is clearly apparent. It is not easy to enumerate all the

causal factors, much less to trace their intricate interrelations. Although it may be easy to name the causal organism and to describe the means of controlling a communicable disease, such as tuberculosis or hookworm, it is with far more difficulty that we are able to define and control the economic and social conditions which make it possible for the disease to flourish.

Poverty and years of financial depression, wars, ignorance, and the greedy exploitation of ignorant credulity, for example, all are allies of ill health, and no one of them can be vanquished by any simple means. The increased ease of transportation, with the consequent fluidity of population, is another factor in making the spread of disease easier, and the control more difficult. For example, in former days, San Antonio was far enough away from the Mexican border so that an infected person, crossing the border from Mexico, passed through the incubation period, developed the disease and either would not get to San Antonio or was easily detected by the time he arrived. Nowadays, the rapidity of automobile and railroad transportation makes it quite possible that he would reach San Antonio during the incubation period, before the disease had actively developed. The consequence is that although San Antonio is one hundred and fifty miles from the border, it must be considered in protecting our Mexican border from yellow fever.

The increasing amount of automobile transportation has also created an acute safety problem, a social change which is respected in some of our curricula, and which is indeed recognized by the publication of the *Twenty-fifth Yearbook of the National Society for the Study of Education,* Part I of which is devoted entirely to "Safety Education."

The great summer migrations of touring automobiles make more new problems of disease control, as has been mentioned. The health conditions of this country are vitally affected by the constant stream of immigration. Immigration complicates our health problems not only by making necessary a system of examinations for the purpose of excluding persons with obvious physical or mental diseases, but by adding to our population numbers of people who are highly susceptible to certain communicable diseases, who are not used to our climate, our food, or our housing conditions, and who are not always successful in

making healthful adjustments to their new environment. More vital than these problems and more difficult to analyze is the eugenic or dysgenic effect of various classes of immigrants upon our racial stock.

Other complexities of civilized life affect health in even more subtle ways. It is possible and likely that modern methods of housing, heating, and ventilating increase our susceptibility to colds, and to tuberculosis. The healthful results of scientifically controlled outdoor living, use of sunshine and fresh air, in certain sanatoria furnish very strong evidence for this point of view. It is possible also that our habits of clothing are not hygienic. In certain sanatoria for pretubercular children, where the children wear no clothes but shoes and live outdoors all day, even in the winter, the results in improved health are astonishing. Our habits of eating soft food exclusively may contribute to the prevalence of tooth decay. Our modern excessive use of books certainly adds to the amount of eye strain. Sedentary habits of living are encouraged by our present industrial system, particularly among the "white collar" classes. Modern habits of recreation, the excessive frequenting of movies and theatres, for example, too often destroy instead of re-create vitality. Habits of hurry, and the high nervous tension of American urban life also must be recognized as an unhygienic element of our civilization. The very general custom of late marriage among our educated classes also has its serious consequences in that these classes, which, on the whole, are our better classes physically as well as mentally, by deferring marriage, cut down the number of their offspring to a probably dangerous degree, from the standpoint of preserving the best in our national stocks.

Other aspects of these complicated situations which were briefly discussed in the sources of this study were such problems as these:

To conserve natural resources, thereby decreasing poverty and increasing health.

To make expert medical advice available to persons of little means.

To avoid harmful commercial exploitation of the new interest in public health.

The consideration of these complications has a twofold value: first, it helps one to gain perspective, to see that the place of the

school in health education, and in solving health problems, is not an independent one. There must be coöperation between many agencies, of which the school is only one, before these menaces to health will be removed. Second, it helps to forestall any tendency to superficiality in planning a health education program. It necessitates a consideration of fundamental causes and a serious attempt to relate school activities to vital life situations.

CHAPTER XIII

PRESENT PRACTICE IN THE SCHOOLS

An attempt has been made to compare the list of problems made in this study with the subject matter used in health education programs at present in the schools. Two groups of data were available for this purpose. Mention has been made (p. 13) of the analysis made by Miss Strang of twenty recent courses of study and fourteen textbooks. This analysis resulted in a classification of 12,419 total items. Since the basis for classification used by Miss Strang was not just the same as that used by the writer, the results of the two studies are not exactly comparable, but there is enough similarity to make a comparison significant. After conferring with Miss Strang, her results were classified in twenty-four groups, twenty-one of which could be paralleled by groups from the writer's study. It will be recalled that 10,086 total items were recorded in this study. The twenty-one groups selected for comparison with Miss Strang's results included 8,603 of these items, or about eighty-five per cent of the total.

The second group of data with which comparisons were made was the analysis made by Miss Patton and the writer of ten sets of exhibits of classroom materials, actually prepared by the pupils and teachers in a term's work in health education (see page 12). The analysis of the topics included in these exhibits resulted in a total of seven hundred and thirty-six recorded items, which were easily classed in eighteen groups, matching eighteen of the groups in the other two sets of data. There were six of the twenty-four groups which could not be matched by the items in this analysis. These three studies will be referred to in this chapter as Studies A, B, and C, Study A being the analysis made by the writer; Study B that made by Miss Strang, and Study C, that by Miss Patton.

Table XIV gives a summary of the comparisons of the three sets of data, giving for each topic the total number of items

TABLE XIV

COMPARISON OF THREE STUDIES*

Group	No. of Items Recorded			Ranks			Percentages (of Totals)		
	A	B	C	A	B	C	A	B	C
Control of Infection (Communicable Diseases)	2,659	252	36	1	16	7	30.9	2.0	4.9
Community Hygiene	1,653	1,511	26	2	2	9	19.2	12.2	3.5
Racial Hygiene	1,150	311	0	3	15	21.5	13.3	2.5	0
Nutrition	818	2,599	256	4	1	1	9.4	20.9	34.8
Mental Hygiene	283	343	51	5	13	5	3.4	2.8	6.9
Alcohol, Narcotics, Drugs Patent Medicines	246	412	5	6	11	16	2.8	3.3	.7
Big Muscle Activities	233	786	77	7	5	2	2.7	6.3	10.4
Professional Health Service	214	358	1	8	12	18	2.4	2.9	.1
Public Health Education	192	322	25	9	14	10	2.2	2.6	3.3
Ventilation, Air, Sunshine	174	892	50	10	4	6	2.0	7.2	6.8
Personal Cleanliness	160	951	65	11.5	3	3	1.8	7.7	8.8
Elimination of Waste	160	203	2	11.5	17	17	1.8	1.6	.3
Mouth Hygiene	147	489	55	13	9	4	1.7	3.9	7.4
Vision	103	478	11	14	10	11	1.1	3.8	1.5
Clothing	100	156	11	15	18	12.5	1.1	1.2	1.5
Nose and Throat	60	83	7	16	22	14.5	.7	.7	.9
Sleep	56	509	27	17	8	8	.6	4.1	3.7
Accident Prevention	53	519	24	18.5	7	11.0	.6	4.2	3.3
Economic Losses	53	24	0	18.5	24	21.5	.6	.2	.0
Ears	51	137	0	20	20	21.5	.5	1.1	.0
Hair	38	150	7	21	19	14.5	.4	1.2	.9
Physiology	0	742	0	23	6	21.5	.0	5.9	.0
Body Resistance	0	131	0	23	21	21.5	.0	1.1	.0
Defects	0	61	0	23	23	21.5	.0	.5	.0
Totals	8,603	12,419	736				100.0	100.0	100.0

*A = Lerrigo Study
B = Strang Study
C = Patton Study

recorded in each study, the rank according to frequency of mention, and the percentage of the total items accorded to each topic. Correlation coefficients were computed by the formula

$$\rho = 1 - \frac{6SD^2}{n(n^2-1)}$$

The coefficients were found to be as follows:

Lerrigo-Patton data; +.5580
Lerrigo-Strang data; +.4669
Patton-Strang data; +.6971

These coefficients merely express numerically what is quite obvious from an inspection of Table XIV, first, that there is considerable similarity in the relative emphasis given by the three sets of data to the various topics. Secondly, they show that there is more similarity between the topics emphasized in Miss Strang's analysis of textbooks and courses of study, and Miss Patton's analysis of classroom material, than there is between the problems emphasized in the analysis reported by the writer and either of the other sets of data.

These general comparisons, however, are of less value than a study of the specific likenesses and differences shown in Table XIV and a study of the items from Study A which were entirely omitted in making Table XIV. Of the one hundred and sixteen groups of problems listed in Table I, there are eighteen which clearly do not appear in Table XIV. These groups are as follows:

TABLE XV

Problem Groups in Study A Not Included in Study B

1. Circulatory System; Care and Prevention of Defects
2. Glands
3. Voice
4. Asthma
5. Hay fever
6. Degenerative Diseases
7. Cancer
8. Immigration
9. Transportation
10. National Parks
11. Laboratories
12. Biological Products
13. Research
14. Rural Health
15. Life Extension
16. Health
17. Disease
18. Public Health History

There was brief mention of the first three of these in Study B, but items were not recorded so that a comparison could be made.

In arranging the data for Table XIV it was necessary in some instances to group several of the groups listed separately in Table I. All of the groups dealing with Control of Infection were lumped together. This includes all the items dealing with communicable diseases. Since Miss Strang's data were not arranged to show which infections specifically were discussed, it was only possible to make this general comparison.

Care of the Skin, Bathing, and Care of the Hands in Table I were grouped as Personal Cleanliness in Table XIV.

Community Hygiene in Table XIV includes all the problem groups listed in Table I under that heading, except seven which are immigration, transportation, national parks, laboratories, biological products and research. Ventilation is listed separately.

Alcohol, Narcotics, Tobacco, and Nostrums and Quackery were assembled in one group in Table XIV.

Four of the five groups under Use of Professional Health Service in Table I were grouped under the heading named in Table XIV. The fifth group, Patent Medicines, was grouped with alcohol, etc., for comparison.

The five groups under Racial Hygiene in Table I were classed together in Table XIV.

There were three groups of Miss Strang's data with which no comparison could be made, Physiology, Defects, and Body Resistance. It is true that there was a certain amount of discussion of all of these points in Study A. However, since the writer's classification was based on problems, not facts, physiological discussion was recorded with the problem to which it related. Neither was a separate heading made for defects in general since problems of preventing the several kinds of defects were classified with the headings dealing with the care of various parts or functions of the body. Prevention of postural defects is classed under Big Muscle Activity; prevention of malnutrition with Nutrition; prevention of eye defects with Vision, and so on.

IMPORTANT DIFFERENCES

Keeping these facts in mind, the first great difference which is apparent in the three studies is that Study A deals more largely with problems of controlling infection and community hygiene

than either of the other studies. Control of infection (that is, communicable diseases) and community hygiene rank first and second in Study A. Control of infection ranks sixteen, and community hygiene second in Study B. In Study C, control of infection ranks seventh, community hygiene ninth.

TABLE XVI

Comparison of Major Problems in Three Studies

	No. of Items Recorded			Ranks			Percentages of Totals		
	A	B	C	A	B	C	A	B	C
Control of Infection	2,659	252	36	1	10	4	30.9	2	4.9
Personal Hygiene	1,926	6,541	542	2	1	1	22.4	52.6	73.6
Community Hygiene ...	1,827	2,403	76	3	2	2	19.2	19.3	10.3
Racial Hygiene	1,150	311	0	4	9	10	13.3	2.5	0.0
Mental Hygiene	283	343	51	5	7	3	3.4	2.8	6.9
Temperance Education .	246	412	5	6	5	6	2.8	3.3	0.7
Interpretative Material .	245	346	25	7	8	5	2.8	2.8	3.3
Professional Health Service	214	358	1	8	6	7	2.4	2.9	0.1
Accident Prevention	53	519	0	9	4	10	0.6	4.2	3.3
Physiology	0	742	0	11	3	10	0.0	5.9	0.0
Body Resistance	0	131	0	11	11	10	0.0	1.1	0.0
Defects	0	61	0	11	12	10	0.0	0.5	0.0
	8,603	12,419	736						

A = Lerrigo Study
B = Strang Study
C = Patton Study

A second and similar difference is that the "social health" or "racial hygiene" group, which ranks third in Study A ranks fifteenth in Study B and receives no attention at all in Study C.

The comparisons in Table XIV may be summarized a little more clearly by combining the problems recorded there as nearly as possible according to the ten major divisions of problems. This would bring all the personal hygiene problems in one group and the comparison would be as in Table XVI. It should be noted that the items under ventilation are included with community hygiene, since that has been the classification used elsewhere in this study, although some of the items in that group are more properly classed as personal hygiene.

It will be observed from Table XVI that the discussion of the first four groups of problems, control of infection, personal hygiene, community hygiene and racial hygiene, is more evenly

distributed in Study A than in Studies B or C. The differences are in fact very striking. Whether or not one distribution is better than another for educational purposes, is debatable, but such wide differences certainly must raise the question for the makers of courses of study as to what the basis should be upon which their distribution of subject matter is to be made.

As has been pointed out in a preceding chapter, it is only in a general way that the ranking of the problems in the sources analyzed by the writer can be interpreted as an index of the relative importance of health problems. However, there is no question that problems of controlling infection, of community hygiene, and of social or racial hygiene are of great importance. Judging by the studies reported here, it seems to be the present tendency to give only a small amount of attention to control of infection and to racial hygiene.

The texts and courses of study analyzed by Miss Strang, and the materials analyzed by Miss Patton, all represent elementary school work. It may be that an analysis of high school materials would show a greater emphasis on these groups of problems. It is possible that these problems of communicable disease, of community hygiene, and of racial hygiene, are too difficult or are unsuitable for elementary schools. This is a question of psychology and of teaching method to which this study does not give an answer. In view of the importance of these problems, however, it seems to the writer that those who select the subject matter of health education should at least give these problems their serious consideration.

The community aspects of health protection may seem to be outside the child's interest, when by "community health" is meant only the organized public health activity of adults. However, the child in school has his own community in which he lives as a responsible member, and this community has its own health problems. It seems likely that the attitude of feeling responsible for the health of neighbors and fellow-citizens is best built up by beginning in the child's early school experience to teach him in what way he is responsible for the health of his school fellows. Similarly, the attitudes involved in a constructive educational program of racial hygiene, or education for parenthood should have their beginnings, their roots, in attitudes formed in childhood.

The next significant point shown by an inspection of Table

XIV is the similarity of emphasis given by all three analyses to problems of nutrition. It ranks fourth in Study A and first in each of the others. The question may be raised whether to give such a large proportion to one problem as indicated in Study C (35 per cent) would make it impossible to treat other problems adequately. It might be that overemphasis upon nutrition and other factors directly concerned with self-preservation would unwisely restrict the time and attention given to other matters, such as ideals of mental and social health, and would result in a narrow conception of health. This question, of course, cannot be answered by this study.

In this connection it is also interesting to note that in Table XIV there are listed twenty-four groups of problems, of which eight unquestionably are community health problems involving community coöperation. In the ten highest ranking problems in Study A, six of those eight groups are included. Moreover, the larger portion of items recorded for Study A but not included in Table XIV deal with community problems. On the other hand, the ten highest ranking problems in Study B, as recorded in Table XIV, include only two of the eight possible community health problems, while the ten highest ranking problems in Study C include only three.

Problems of safety and first aid rank conspicuously lower in Study A than in Studies B and C. However, the accident statistics of census reports leave no doubt that this is a serious problem, though it was not given much discussion, apart from the tabular presentation of statistics, in the sources for Study A.

The need for temperance education is indicated in Table XIV by the group of problems dealing with alcohol, tobacco and drugs. Since patent medicines were also included in this group in Study B data, for purposes of comparison a similar grouping was made in the other two analyses. Very little attention was given this group in Study C, there being only five total mentions made in all, and those dealing with the use of tobacco. The existing conditions in this country lead one to conclude that constructive, scientific temperance education is still necessary.

It should be said with reference to the discussion of the effective use of professional health service that the material in Study B, "treatment of the sick" does not fully correspond to this group of problems in Study A, although the two groups in-

volve similar factors. There is more emphasis in Study B upon home nursing than in Study A, where the emphasis is more upon ability to select expert service and to use it most effectively at strategic times. A great deal of emphasis in Study A was placed upon periodic health examinations, and this is probably the aspect of use of professional service with regard to which education is most needed. In Study C, only one mention was made of this subject. The situation existing in the schools is frequently this: that periodic health examinations are given, but that the educational possibilities of the experience are almost entirely neglected. Aside from the practical difficulties involved in using the educational possibilities of a health examination that, in many schools, must be given with a minimum of time and expense, there are psychological difficulties to be met. It is possible that much study by a child of his own health examination and condition would result in morbid self-consciousness. This should certainly be avoided. The ideal result would be to create an appreciation of the value of periodic health examinations without turning the child's curiosity too introspectively upon his own condition.

The group of problems dealing with mental hygiene ranks higher in Studies A and C than in Study B. It is somewhat of a question how much of mental hygiene is adapted to direct study by elementary or high school pupils. Much of mental hygiene consists of formation of attitudes and of habits of emotional control. A constructive school health program should certainly contribute to the formation of these attitudes and habits, but it is difficult to say how much related subject matter should be included in the actual course of study followed by the pupils.

The remaining differences in Table XIV do not seem to be particularly significant.

It has been shown earlier in this study that problems of racial hygiene, personal hygiene, control of infection, and community hygiene are given relatively large amounts of attention in the sources analyzed in Study A. So far as may be judged by the studies reported in this chapter, the tendency in the schools is to give a small amount of attention to racial hygiene and control of infection, and a larger amount of attention to personal hygiene and community hygiene.

CHAPTER XIV

THE VALUE OF THE METHOD USED IN THIS STUDY

As this study has progressed, the writer has become convinced, first, that this type of study is valuable as a preliminary step in curriculum making and, second, that it needs supplementing by several other kinds of investigation and study. The greatest values resulting from such a type of study as this seems to the writer to be summarized in the following statements:

1. A comprehensive view of the field is given, defining the range of health problems, and indicating the scope of the field from which a selection of health education materials should be made.
2. Such a study gives us assurance that we are dealing with problems which people must actually meet in contemporary life; that the problems are not merely theoretical.
3. By means of such studies we are enabled to estimate with greater accuracy than by judgment alone, the relative importance of various groups of health problems; not in detail, but in a general way. There are other kinds of investigations needed as well, in making such estimates, but this type of study is one of the useful methods.
4. Such a study enables us to estimate in general what aspects of health education are most or least emphasized in present health teaching.

All of these results are of value for curriculum makers. However, these steps are only introductory.

In the first place, this study leaves many unanswered questions in making the estimate of the relative importance of the problems, for the preservation of health. Some problems are more closely connected with the preservation of life than others; some are related to essential life processes and must be continuously faced in the life of every individual. Problems con-

cerned with nutrition, respiration, and elimination, for example, come in this class, while the problem of keeping the hair clean has nothing to do with preservation of life. Other problems are concerned with the prevention of various kinds of ill health. Problems of avoiding infection or of proper use of health service are in this class.

In estimating the importance of any activity for health, both of these questions should be thoughtfully considered. How is the activity concerned with essential life processes? How does it help to prevent illness?

Another question to be considered in estimating the relative importance of health problems is the frequency with which they occur. Some problems concern every individual, at all ages. Problems of nutrition could be mentioned again here. There are, of course, variations in detail from person to person, and age to age, but the major problem concerns every one.

Statistics of morbidity and mortality indicate the frequency with which some other kinds of problems occur, such as infectious diseases, accidents, degenerative diseases, and so on, thus indicating by implication what mistakes of carelessness or ignorance are widespread. For example, the fact that tuberculosis is one of the most prevalent communicable diseases indicates the necessity for educating people to avoid those errors in living which increase susceptibility or chances of exposure to that disease. The fluctuating rise and fall of smallpox statistics in various localities indicates for one thing a corresponding laxity or inefficiency of education with regard to vaccination.

Such statistics, however, are rather crude for educational purposes. It would be of great value to have a survey of large numbers of people showing their habits, their attitudes, and the extent and accuracy of their knowledge with regard to health. Such a comprehensive survey has not been made, although the data gathered by the American Child Health Association in a survey of eighty-six cities in 1924-1925 gives some valuable information regarding the health habits of children.

The question then arises, after these estimates of the relative importance of health problems have been made, whether the same problems exist everywhere, or whether local conditions differ.

The closely knit civilization in which we live makes it im-

possible for the people in one locality to ignore a serious health problem existing anywhere in the country. On the other hand, the writer believes that it is certainly necessary to make adequate provision for adaptation of the course of study to local needs. Studies have been reported in St. Louis and San Antonio designed to meet the need for those localities.[1] The former was made particularly with reference to accident prevention, the second was a more comprehensive survey of health conditions.

Moreover, it is the writer's belief that, although the curriculum maker should be oriented, first, by a comprehensive or general study of national or international health problems, and second, by a study of local health problems, ideally, in the final selection of subject matter or activities the teacher should be guided by the health needs of the individual pupils whom he teaches.

This would involve the use of a plastic course of study and would only be successful with teachers so conversant with the essentials of healthful living that they were able to recognize the existing health needs of their pupils, even the more subtle needs not disclosed, perhaps, by a survey of the daily health habits. One very real health need, for example, is the ability to recognize the worthlessness of patent medicines and of health fads that are extensively advertised. A teacher left to his own devices and depending upon the apparent health needs of his pupils in selection of subject matter might not realize this fact, unless he had been definitely prepared by a study of personal and community health problems.

It seems possible that one of the chief uses of such studies as the one here reported should be in the preparation of teachers. Studies in curriculum making should be used by those who make curricula, and the teacher should be prepared to take the very important part in this task, which is now being assigned to her.

Aside from the questions of the relative importance of these problems in preservation of health, and of the frequency of their occurrence, other questions arise with regard to the value of this method of approach to curriculum making.

One of the first of these is the question whether child needs or adult needs should be considered the basis in curriculum

[1] Payne, E. George. Studies five and six reported in Chapter X, *The Third Yearbook, Department of Superintendence,* National Education Association, 1925, pp. 308-10.

making and whether this method of analysis shows adult or child needs. It seems clear that both should be considered in planning a health education program to extend through the secondary schools. Indeed, it is scarcely possible to do otherwise. There is no better guarantee of adult health than a healthy childhood; and proper care of the child's health would help to prevent much of the ill health of adults, so that the meeting of children's health needs does in one sense help to meet the needs of adults.

A study of adult health shows that much of adult ill health is due to neglect in childhood. It may not be realized that the factors neglected in childhood are important until a study of the causes of adult ill health traces back the roots of these disorders to childhood. The life of the individual is a unit, and it is impossible to understand any one part of it completely, with regard to health, without studying the whole.

This does not, of course, lead us to the conclusion that children should study about the problems of adult ill health. But if an adult disorder can be prevented, let us say, by the observance of certain principles of diet in childhood and youth, it is certainly sensible to teach in childhood the practice of those principles. As has been mentioned in Chapter VI, in the discussion of degenerative diseases, the hope of preventing or postponing these diseases, so far as is known, lies in prevention of certain infections, many of which occur in childhood, and in life-long observance of certain principles of personal hygiene. The implication as the writer interprets it, is that in a health education program, these preventive factors should be given their due place. This is one of the instances in which a study of adult health problems is significant for teachers of children in elementary and secondary schools, and it is such instances as this which lead to the conclusion that both adult and child needs should be studied by those who are making courses of study in health education.

The method of approach to curriculum making used in this study gives a list of problems dealing with both child and adult health needs. It is true that in many instances they are stated in adult terms, and that when this is the case, considerable additional study and thought are often necessary to ascertain what is the place of the problem in the curriculum. For example,

the problem of making the selection of one's daily food concerns nearly all adults but there are many children who have little or no choice in the matter. Shall they then be taught nothing about food selection?

It is evident that this sort of study is a starting point and a guide for the curriculum maker, but that it does not relieve him of the responsibility of using every other available means of validating the selection of his material.

When it comes to the actual arrangement of subject matter in a program of health education, this type of study answers none of the many questions which arise, many of which are psychological in nature, and could be answered only by classroom experiment.

Another question which demands consideration, and which is not answered by this study, is whether the scientific knowledge with regard to a health problem is reliable or extensive enough so that it can be wisely included in a program of health education. For example, so little is known about the cause and prevention of cancer that, although it is one of the outstanding health problems of the day, there can be scarcely any attention given it in a teaching program, excepting to educate people with regard to the greater chances of recovery if the cancer is discovered and removed early in its development, and with regard to the fallacy of depending on any of the "sure cures" advertised. If, as in this case, knowledge of methods of control of a health hazard is so scanty that there is very little or no hope of controlling or avoiding the danger, with the means at our command, it may be unwise to include such a problem in the health education program of the schools. It is possible that the effect would be merely to arouse useless fear, thus sacrificing mental health and peace for the doubtful good of added information.

Another question which arises is whether the school, the home, the public health nurse, the health center, the public press, the board of health, the voluntary health organization, or some other social agency, is best equipped to carry on education with regard to any particular problem or group of problems. Consider cancer again as an example. It is important that the adult population should know the two facts mentioned above, that is, that chances for recovery are greater the earlier the cancer is

discovered and removed, and that the "sure cures" advertised are worthless. Because cancer is chiefly a disease of middle age, and because much study of it may result in harmful worry, it is doubtful whether elementary and junior high schools should give any attention to it in health education programs. It may be in this case that the best plan is to provide for adult education through publicity carried on by boards of health, or by public health nurses. It may also be that positive constructive teaching about cancer prevention should be included in senior high schools and college. A study of the resources of the local community, as well as psychological investigations would be required to answer this question fully.

All of these questions point to the fact that such a study as this does not serve the purpose of summarizing or listing the exact materials to be used in a course of study. It serves rather to make a general survey of existing problems which educators should keep in mind when selecting subject matter.

There is no one easy rule for selecting the subject matter of health education. It is a many-sided problem. Principle must be balanced against principle; the lesser benefit must not be mistaken for the greater. Many of the serious questions waiting to be answered will be unsolved until we have accumulated the results of controlled experiment and accurate observation of what actually happens to children in the health education process.

CHAPTER XV

SUMMARY AND DISCUSSION

It was the purpose of this study to formulate a list of health problems which should provide valuable information for those who are concerned with selection of subject matter in the field of health education. This list was formulated by analyzing seven different groups of sources which deal with health problems. The groups of sources analyzed were:

I. Mortality statistics of the Bureau of Census,
II. Bibliography of the publications of the United States Public Health Service,
III. Annual Reports of the Surgeon General,
IV. Authoritative public health books,
V. A survey of the activities of municipal boards of health in eighty-three cities,
VI. Authoritative personal hygiene books,
VII. Some of the publications of the Metropolitan Life Insurance Company and the Life Extension Institute.

As a result of the analysis, one hundred and sixteen groups of problems are listed, as shown in Table I. The one hundred and sixteen groups were classified in ten divisions for certain purposes of this study; racial hygiene, personal hygiene, mental and nervous hygiene, degenerative diseases, control of infection, community hygiene, professional health service, temperance education, safety education, and interpretative material.

There were 10,086 recorded items in this analysis, including both the statements of problems and of questions related to the problems with duplications. The major divisions of problems just named ranked as follows according to frequency of mention: control of infection (2,659), personal hygiene (2,425), community hygiene (2,235), racial hygiene (1,150), mental and nervous hygiene (283), professional health service (281), de-

generative diseases (200), temperance education (179), safety education (53), and interpretative material (621).[1]

The racial hygiene division included problems of eugenics, sex education, venereal diseases, child health, and maternity hygiene.

Under personal hygiene were included problems dealing with nutrition and food and prevention of defects of nutrition, big muscle activity and prevention of skeletal and muscular defects, sleep, work, fatigue, circulatory system and prevention of diseases of circulatory system, excretion and elimination of waste and prevention of kidney diseases, skin, bathing, clothing, glands of internal secretion including prevention of goiter and diabetes, mouth hygiene, nose and throat, voice, ears, adenoids, tonsils, asthma, hay fever, vision, headache, feet, hands and hair.

There were no sub-divisions in the mental hygiene division.

The degenerative disease division included the general discussion of degenerative diseases in which the particular disease was not specified and the discussion of cancer. Discussion of specified degenerative diseases was recorded among the problems of caring for the particular part of the body affected; for example, heart diseases were classified with care of the circulatory system.

The division concerning control of infection included problems dealing with tuberculosis, colds, pneumonia, other respiratory diseases, bronchitis, influenza, diphtheria, scarlet fever, measles, whooping cough, meningitis, poliomyelitis, mumps, encephalitis, typhoid, hookworm, diarrhœa, dysentery, cholera, malaria, plague, yellow fever, typhus fever, dengue, deer fly fever, Rocky Mountain spotted fever, sleeping sickness, relapsing fever, local infections, appendicitis, septicemia, and unspecified streptococcus infection, septic sore throat, rheumatism, smallpox, chickenpox, parasitic skin infections, trachoma, leprosy, anthrax, tetanus, rabies, foot and mouth disease, Malta fever, yaws, general discussion.

The community hygiene division included problems dealing with public health administration, quarantine, immigration, vital statistics, disinfection and fumigation, milk supplies, food supplies, water supply, sewage disposal, garbage, street cleaning, control of insects, housing, plumbing, heating, ventilation, industrial hygiene, transportation, national parks, laboratory, biological products, and research.

[1] Interpretative material is not included when arranging these groups in order of rank, since it does not present problems, so much as interpretations.

The division relating to use of professional health service includes problems dealing with medical service, health examination, nursing, hospitals, health centers, and nostrums and quackery.

The division of temperance problems includes problems dealing with alcohol, tobacco, and other narcotics.

The division dealing with safety problems dealt with accident prevention.

The interpretative material includes discussion of (1) the necessity for public health education, (2) the value of life extension programs, (3) the specific problems of rural health, and (4) the economic and social aspects of public health.

The ten highest ranking groups of problems, of the one hundred and sixteen listed in Table I, are in order: nutrition, venereal diseases, administration of public health activities, child health, tuberculosis, industrial hygiene, malaria, mental hygiene, big muscle activity, and plague. The ten lowest ranking problems are care of the voice, malta fever, other respiratory diseases (most prevalent respiratory diseases not included) septic sore throat, appendicitis, street cleaning, diarrhœa, foot and mouth disease, yaws, and plumbing.

All of the large divisions of problems were discussed in a variety of sources. One of the divisions of problems was discussed in five source divisions; four of the divisions of problems were discussed in six source divisions, and five divisions of problems were discussed in all seven source divisions. That is, the evidence pointing to the importance of these divisions of problems in no case comes from less than five kinds of sources.

Comparison of the results of the analysis made in this study (Study A) with an anlysis of courses of study and textbooks made by Miss Strang (Study B) and with an analysis of other materials of health teaching actually used in the schools (Study C) showed the following facts.

Correlation between the ranking of the problems recorded in the three studies is expressed by the following correlation ratios:

Studies A and B	+.4669
Studies A and C	+.5880
Studies B and C	+.6971

Practically none of the major health problems are entirely ignored in present practice in the schools, as judged by these studies. However, only a small amount of attention is given to any of the ten large divisions of problems (as classified in Study A) except to personal hygiene and community hygiene. Problems of nutrition received a greater amount of attention than any other one topic.

DISCUSSION

The basic hypotheses underlying this study were (1) that school activities should be concerned with real life problems, and (2) that these problems should be ascertained by investigation supported as far as possible by the evidence of facts rather than opinions. Arguing from these hypotheses, it seemed that a list of problems compiled by analyzing sources which deal with existing health problems should provide valuable information for those who are concerned with selecting the subject matter for health education programs. The sources analyzed in this study deal with existing problems and in the main they present objective data rather than opinions.

The sources analyzed in this study, it may be repeated, were the mortality statistics of the Bureau of Census, a bibliography of the publications of the United States Public Health Service, Annual Reports of the Surgeon General, authoritative public health books, a survey of the activities of municipal boards of health in over eighty cities, authoritative personal hygiene books, and some of the publications of the Metropolitan Life Insurance Company, and the Life Extension Institute. These sources are so varied and deal so largely with facts or with the interpretation of facts by expert opinion that it seems likely that the list of problems resulting from the analysis of these sources is a good representation of existing health problems in the United States.

Having formulated this list of health problems, three other questions immediately arise:

1. What is the relative importance of these problems in maintaining health?
2. What place has education (in or out of the schools), in the solution of these problems?

3. For how much of this educational activity should the schools be responsible?

This study gives a general answer to the first question. However, it should be repeated that it is only in a general way that the writer interprets the ranking of problems according to frequency of mention in this study to indicate their relative importance as health problems. When judged by the number of people affected or the seriousness of the effects for life, it appears that in general the problems ranking highest are more important than those ranking lowest. (See Appendix C.) However, the writer does not consider the frequency of mention an adequate basis for judging that the importance of each problem is indicated by the exact order in which it is ranked; that is, that the second would be more important than the third, or the tenth than the thirteenth. The adequacy of this method in estimating the relative importance of health problems was discussed more at length in Chapter XIV.

With regard to the second question it may be said that the satisfactory solution of most of these problems, according to many public health authorities, involves in some situation or other the intelligent action of individuals, which can result only when the individual has been educated with reference to those situations. This fact has been discussed at some length in the discussions at the ends of chapters dealing with different groups of problems, particularly the problems of community hygiene.

It seems to the writer that those who are planning health teaching programs should be familiar with existing health problems, and that when the solution of the problem depends at any point upon educational measures (either in or out of the schools), they should study the situation carefully to ascertain what part the schools should take in carrying out these educational measures.

This raises the third question. At various points in the chapters dealing with the different groups of health problems, and in Chapter XIV, the writer has briefly discussed the possibilities or difficulties involved in including in the schools educational activity related to the various problems.

Several principles have already been discussed (Chapter XIV) which seem to the writer to be useful criteria in answering this third question: For how much of the educational activity nec-

essary in solving existing health problems should the schools be responsible? These principles may be briefly restated as follows:

1. In the final selection of subject matter the teacher should be guided by the health needs of the individual pupils whom he teaches. It should be pointed out here that the range of health needs as discussed in sources analyzed in this study included mental and social as well as physical health needs.
2. The local health conditions existing in the community in which the pupils live should also be considered in planning a health education program.
3. Those who are planning health education programs should study both adult and child health problems, in order to ascertain what kinds of behavior (habits, skills, attitudes, and knowledge) are most likely to contribute to health throughout life. However, it is necessary to adapt the teaching program for any particular grade or age to whatever stage of development the child has reached at the time with regard to his abilities, interests, and needs.
4. In adapting the teaching program to the various stages of child development, many questions arise, frequently psychological in nature, which can only be answered by controlled experiment.
5. The scientific information used in teaching relating to health problems should be as accurate as possible. When available scientific information is unreliable or scanty, the teaching program should be most carefully planned to avoid possible risks to the children's health and to soundness of associated attitudes and habits dependent upon reliable information.
6. The schools should coöperate with other local agencies interested in health education activities.

With regard to the problems of disease which are listed in this study, it should be said again that the writer does not interpret the existence of these problems to mean that school children should study about these diseases, but rather to mean that those who are planning health teaching programs should ascertain what are the important measures which would prevent the diseases, and that whenever the preventive measures include the necessity for the education of the individual, those who are

planning the health teaching programs should study the situation carefully to see what part of this educational activity the schools should undertake.

The writer does not assume that in this study frequency of mention of a problem is a reliable indication of the amount of attention to be devoted to that problem in making a course of study. The assignment of the amount of time to be given any problem is a matter for classroom experiment, involving questions of psychology, as well as teaching technique.

Thus this study serves, not to list the exact materials which should be used in a course of study, but to furnish a list of existing health problems to which educators should give their consideration when planning programs of health education.

The method used in this study seems to the writer to be a valuable introductory factor for use in making an adequate curriculum in health education. It indicates the range of the field from which a selection of health education materials should be made; it gives assurance that those problems are included in the curriculum which people must actually face in contemporary life; it provides a basis for a rough estimate of the relative importance of the various problems, and helps one to judge which problems now receive a large, and which a small amount of attention in the schools.

However, this study needs to be supplemented by other kinds of studies, particularly experimental studies carried on in classrooms, to solve the psychological problems involved in making an effective arrangement and gradation or progression of the materials in the course of study. It is the experimental study, carried on in classrooms, which seems now to promise the most enlightening results in solving those difficult questions of curriculum making for which such a study as the one here reported can be only preparatory.

APPENDIX A

NUMBER OF ITEMS RECORDED FOR EACH OF THE ONE HUNDRED AND SIXTEEN PROBLEM GROUPS IN EACH SOURCE DIVISION, AND RANK ACCORDING TO FREQUENCY OF MENTION

Rank and Totals by Source Divisions
Control of Infections

	I		II		III		IV		V		VI		VII		Totals	
	Number	Rank	Number	Rank	Number	Rank	Number	Rank	Number	Rank	Number	Rank	Number	Rank	Number	Rank
Tuberculosis	2	29.5	45	8.5	37	17	31	9	30	3	138	7	13	4	296	5
Colds			1	70.5			11	28.5			134	8			146	18
Pneumonia	5	11.5	5	46.5	10	39.5	16	23			55	23	1	18	92	31
Other Respiratory Diseases	4	15.5			2	63									6	109
Bronchitis	6	8.5									5	87			11	98
Influenza	3	21	11	30	25	23.5	2	65			35	41.5			76	42.5
Diphtheria	4	15.5	17	21.5	11	37	5	43	8	15	45	30.5			90	33
Scarlet Fever	2	29.5	3	54.5	4	51.5	5	43	4	21	40	34			58	52
Measles	3	21	3	54.5	3	56.5	5	43	5	18	24	56.5			43	70
Whooping Cough	2	29.5	1	70.5			2	65	5	18	36	39.5			46	67
Meningitis	2	29.5	10	32	12	34.5	3	56	5	18	28	47.5			60	50
Poliomyelitis	3	21	18	19.5	6	45	5	43	4	21	30	45			66	45
Mumps	1	46	1	70.5					3	24.5	15	69			20	90.5
Encephalitis	3	21	5	46.5	1	71									9	102.5
Typhoid	4	15.5	2	61	32	20	16	23	7	16	75	17	1	18	137	19
Hookworm	1	46	11	30	9	41.5	16	23			39	35			76	42.5
Diarrhoea	3	21			1	71									4	112.5
Dysentery	2	29.5	1	70.5	10	39.5					31	44			44	69
Cholera	1	46	4	49	12	34.5	2	65			26	52.5			45	68
Malaria	4	15.5	109	3	108	6	18	20.5			54	24			293	6
Plague (bubonic)	1	46	63	6	137	4	4	49.5			24	56.5			229	10
Yellow Fever	1	46	28	14	25	23.5	9	31.5			22	61			85	37
Typhus	1	46	14	25.5	27	22	1	74			15	69			58	52
Dengue	1	46	2	61	4	51.5	3	56			10	77.5			20	90.5
Deer Fly Fever			11	30	13	33									24	87

Rocky Mt. Spotted Fever			13	27	11	37					4	89			28	83.5
Sleeping Sickness	1	46									9	79.5			10	100.0
Relapsing Fever	1	46									7	81.5			8	104.5
Local Infections											58	19.5	4	7.5	62	48
Appendicitis	2	29.5									3	90.5			5	111
Septicemia and Unspecified Streptococcic infection	1	46	4	49	2	63									7	106.5
Septic Sore Throat	2	29.5	3	54.5	1	71									6	109.0
Rheumatism	5	11.5					1	74			26	52.5			32	80.5
Smallpox	1	46	16	23.5	34	19	6	38	4	21	38	36.5			99	28.5
Chickenpox	1	46					4	49.5			15	69			20	90.5
Parasitic Skin Infections			3	54.5							6	84			9	102.5
Trachoma			16	23.5	23	25	1	74							40	72.5
Leprosy	1	46	25	16	22	26					1	94			58	53
Anthrax	1	46	3	54.5	15	31					9	79.5			28	83.5
Tetanus	3	21	6	43	2	63	1	74			28	47.5			40	72.5
Rabies	2	21	4	49	5	47.5					45	30.5			56	56
Foot and Mouth Disease											1	94			1	115
Malta Fever	1	46	2	61	3	56.5									6	109
Yaws					1	71									1	115
General Discussion of Infection			1	70.5	18	29	7	35.5	18	7	65	18			109	24

*Roman numerals refer to source divisions.

NUMBER OF ITEMS RECORDED FOR EACH OF ONE HUNDRED AND SIXTEEN PROBLEM GROUPS IN EACH SOURCE DIVISION, AND RANK ACCORDING TO FREQUENCY OF MENTION

	I *		II		III		IV		V		VI		VII		Totals	
	Number	Rank	Number	Rank	Number	Rank	Number	Rank	Number	Rank	Number	Rank	Number	Rank	Number	Rank
Public Health Administration			176	1	139	3	156	1	36	2	22	61			529	3
Quarantine					106	7	4	49.5							110	23
Immigration			3	54.5	77	10	9	31.5							89	34.5
Vital Statistics			59	7	71	11.5	46	6	11	11.5	11	76	4	7.5	202	11
Disinfection and Fumigation			35	11	7	43.5			3	24.5	36	39.5			81	40.5
Milk Supplies			1	70.5	9	41.5	4	49.5	20	6	47	29			81	40.5
Food Supplies			6	43	2	63	10	30	15	9	6	84			39	74
Water Supply			30	13	20	27.5	7	35.5	11	11.5	32	43			100	26.5
Sewage Disposal			23	17	70	13	2	65	9	14	21	63			125	20
Garbage					1	71	1	74	3	24.5	5	87			10	100
Street Cleaning							2	65	1	33	1	94			4	112.5
Control of Insects			9	33	4	51.5	3	56			25	55			41	71
Housing			1	70.5			2	65	15	9	2	92			20	90.5
Plumbing									1	33					1	115
Heating											14	72.5			14	95
Ventilation			8	35	5	47.5	14	25	1	33	146	5			174	14
Industrial Hygiene	2	29.5	8	35	167	2	75	3	2	28	42	32			296	7
Transportation			17	21.5	71	11.5	8	33.5							96	30
National Parks					30	21									30	82
Laboratories			31	12	36	18	2	65	15	9					84	38
Biological Products			41	10	11	37									52	62
Research					52	14.5	5	43							57	54

* Roman numerals refer to source divisions.

Medical Service			7	38.5	3	56.5	27	14			22	61	3	9	62	48
Health Examination			1	70.5	3	56.5	5	43	1	33	15	69	25	3	50	65
Nursing					1	71	6	38	21	5	5	87			33	79
Hospitals			18	19.5	14	32	4	49.5	1	33					37	77
Health Centers					2	63	29	12.5			1	94			32	80.5
Nostrums and Quackery			6	43	3	56.5	30	10.5	1	33	27	49.5			67	44
Alcohol	2	29.5	1	70.5			12	26.5			49	28			64	46
Narcotics			14	25.5	5	47.5	22	17	2	28	19	64.5			62	48
Tobacco							2	65			51	26			53	60
Accident Prevention	25	1	2	61			1	74			23	58.5	2	11.5	53	60
Public Health Education			8	35	52	14.5	62	4	10	13	58	19.5	2	11.5	192	12
Rural Health			45	8.5	98	8	20	18							163	15
Economic and Social			3	54.5	5	47.5	26	15			18	66	1	18	53	60
Life Extension	1	46					48	5			12	75	38	1	99	28.5
Health			26	15	1	71					29	46			56	56.5
Disease	1	46	6	43	2	63	3	56			35	41.5	1	18	48	66
Public Health History			1	70.5			6	38			3	90.5			10	100

Ranks and Totals by Source Divisions

Eugenics—Personal Hygiene—Mental Hygiene—Degenerative Diseases

	I*		II *		III		IV		V		VI		VII		Totals	
	Number	Rank	Number	Rank	Number	Rank	Number	Rank	Number	Rank	Number	Rank	Number	Rank	Number	Rank
Eugenics							24	16			26	52.5	1	18	51	62.5
Sex Hygiene			1	70.5	20	27.5	2	65			88	13	7	6	118	21
Venereal Diseases	9	4	131	2	252	1	30	10.5	24	4	118	10			564	2
Child Health	6	8.5	81	4	113	5	91	2	86	1	15	69	12	5	404	4
Maternity Hygiene	5	11.5			1	71	3	56	3	24.5			1	18	13	96.5
Nutrition	7	6.5	77	5	82	9	35	8	2	28	612	1	1	18	818	1
Big Muscle Activity	1	46	6	43	3	56.5	29	12.5			194	2			233	9
Sleep											56	22			56	56.5
Work											19	64.5			19	93.5
Fatigue							18	20.5			5	87			23	88
Circulatory Systems	13	2.5					19	19			157	4	2	11.5	191	13
Excretion and Elimination of Waste	5	11.5			2	63	12	26.5			140	6			160	16
Skin	3	21	3	54.5							85	15			91	32
Bathing			1				2	65			53	25			56	56.5
Clothing							3	56			97	11			100	26.5
Glands	13	2.5	12	28	4	51.5	11	28.5			41	33	1	18	82	39
Mouth Hygiene			7	38.5	17	30	2	65			121	9			147	17
Nose and Throat	1	46									7	81.5			8	104.5
Voice											6	84			6	106.5
Ears	1	46									50	27			51	63.5
Adenoids	1	46	2	63							23	58.5			26	86
Tonsils											27	49.5			27	85
Asthma	1	46					4	49.5			14	72.5			19	93.5
Hay Fever			7	38.5			3	56			26	52.5			36	78
Vision	1	46	7	38.5			5	43			90	12			103	25
Headache							1	74			85	15			85	36
Feet			1	70.5							37	38			38	75.5
Hands											13	74			13	96.5
Hair											38	36.5			38	75.5
Mental Hygiene	7	6.5	20	18	38	16	36	7	1	33	181	3			283	8
Degenerative Diseases					1	71					57	21	31	2	89	34.5
Cancer	8	5	1	70.5	7	43.5	8	33.5			85	15	2	11.5	111	22

APPENDIX B

TOTAL ITEMS RECORDED IN EACH SOURCE FOR EACH OF THE TEN DIVISIONS OF PROBLEMS

TOTAL ITEMS RECORDED FOR EACH OF THE TEN DIVISIONS OF PROBLEMS IN EACH SOURCE

	*1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Racial Hygiene	20	203	117	94	54	62	59	44	106	113			10	38	7	12	72	64	54	1	12	7	1		1,150
Personal Hygiene	47	121	8	23	30	20	27	47	97	2			2	482	141	196	220	414	543	3			1	1	2,425
Mental and Nervous Hygiene	7	20	17	6	10	1	4	15	21	1				65	12	22	11	41	30						283
Degenerative Diseases.....	8	1			2	2	4		8					31			6	58	47	1	2				200
Control of Infections	81	452	127	157	149	85	109	41	129	97			9	167	14	25	298	345	355	5	12			2	2,659
Community Hygiene	2	444	199	187	169	133	171	123	227	143			3	56	24	52	121	47	110	3	1	15	15		2,235
Professional Health Service .		31	7	4	3	8	4	21	80	24			1	12	22	5	16	3	12		17		3	8	281
Temperance Education	2	15	1		2	1	1	14	22	2				8	3	10	31	33	34						179
Safety Education	25	2						1								1	5	17		2					53
Interpretative Material	2	45	23	38	50	32	15	80	85	10	8	29	7	73	13	31	2	5	31	2	15	5	8	12	621
	194	1,334	499	509	489	344	394	386	775	392	8	29	32	932	236	354	782	1,027	1,216	17	59	27	28	23	10,086

* Key numbers of sources.

APPENDIX C

ONE HUNDRED AND SIXTEEN GROUPS OF PROBLEMS RANKED ACCORDING TO FREQUENCY OF MENTION

APPENDIX C

ONE HUNDRED AND SIXTEEN GROUPS OF PROBLEMS RANKED ACCORDING TO FREQUENCY OF MENTION

	Number	Rank		Number	Rank
Nutrition	818	1	Laboratory	84	38
Venereal Diseases	564	2	Glands of Internal Secretion including prevention of Goiter and Diabetes	82	39
Public Health Administration	529	3	Milk Supplies	81	40.5
Child Health	404	4	Disinfection and Fumigation	81	40.5
Tuberculosis	296	5.5	Influenza	76	42.5
Industrial Hygiene	296	5.5	Hookworm	76	42.5
Malaria	293	7	Nostrums and Quackery	67	44
Mental and Nervous Hygiene	283	8	Poliomyelitis	66	45
Big Muscle Activity and Prevention of Skeletal and Muscular Defects	233	9	Alcohol	64	46
Plague	229	10	Narcotics	62	48
Vital Statistics	202	11	Medical Service	62	48
Public Health Education	192	12	Local Infections	62	48
Circulatory System and Prevention of Diseases of Circulatory System	191	13	Meningitis	60	50
Ventilation	174	14	Scarlet Fever	58	52
Rural Health	163	15	Typhus Fever	58	52
Excretion and Elimination of Waste and Prevention of Kidney Diseases	160	16	Leprosy	58	52
Mouth Hygiene	147	17	Research	57	54
Colds	146	18	Health	56	56.5
Typhoid	137	19	Bathing	56	56.5
Sewage Disposal	125	20	Sleep	56	56.5
Sex Hygiene	118	21	Rabies	56	56.5
Cancer	111	22	Accident Prevention	53	60
Quarantine	110	23	Tobacco	53	60
General Discussion	109	24	Economic and Social	53	60
Vision	103	25	Biological Products	52	62.0
Water Supply	100	26.5	Ears	51	63.5
Clothing	100	26.5	Eugenics	51	63.5
Life Extension	99	28.5	Health Examination	50	65
Smallpox	99	28.5	Disease (unspecified)	48	66
Transportation	96	30	Whooping Cough	46	67
Pneumonia	92	31	Cholera	45	68
Skin	91	32	Dysentery	44	69
Scarlet Fever	90	33	Measles	43	70
Degenerative Diseases	89	34.5	Control of insects	41	71
Immigration	89	34.5	Trachoma	40	72.5
Headache	86	36	Tetanus	40	72.5
Yellow Fever	85	37	Food Supplies	39	74
			Feet	38	75.5
			Hair	38	75.5
			Hospitals	37	77
			Hay Fever	36	78
			Nursing	33	79
			Health Centers	32	80.5
			Rheumatism	32	80.5

APPENDIX C (*Continued*)

ONE HUNDRED AND SIXTEEN GROUPS OF PROBLEMS RANKED ACCORDING TO FREQUENCY OF MENTION

	Number	Rank		Number	Rank
National Parks	30	82.	Garbage	10	100
Rocky Mountain Spotted Fever	28	83.4	Parasitic Skin Infections	9	102.5
Anthrax	28	83.5	Encephalitis	9	102.5
Tonsils	27	85	Nose and Throat	8	104.5
Adenoids	26	86	Relapsing Fever	8	104.5
Deer Fly Fever	24	87	Septicemia and unspecified Streptococcus	7	106
Fatigue	23	88	Voice	6	108.5
Chicken Pox	20	90.5	Malta Fever	6	108.5
Mumps	20	90.5	Other Respiratory Diseases	6	108.5
Housing	20	90.5	Septic Sore Throat	6	108.5
Dengue	20	90.5	Appendicitis	5	111
Work	19	93.5	Street Cleaning	4	112.5
Asthma	19	93.5	Diarrhœa	4	112.5
Heating	14	95	Foot and Mouth Disease	1	115
Hands	13	96.5	Yaws	1	115
Maternity Hygiene	13	96.5	Plumbing	1	115
Bronchitis	11	98			
Sleeping Sickness	10	100			
Public Health History	10	100			

VITA

Marion Olive Lerrigo—Born, October 27, 1896, Topeka, Kansas. Degrees conferred: A.B., 1919, Washburn College, Topeka, Kansas; A.M., 1921, Teachers College, Columbia University. Elected in 1919 to membership, Tau Delta Pi, honorary scholastic fraternity of Washburn College. Publications: collaborator in preparation of *Health Education,* A Program for Public Schools and Teacher Training Institutions, report of the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, 1924; collaborator in preparation of "Health and Physical Education," Chapter 10, *Third Yearbook of the Department of Superintendence,* 1925.